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A study of the 45-15 cycled-attendance plan for year-round operation of schools in Prince William County, Virginia

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A STUDY OF THE 45-15 CYCLED-ATTENDANCE PLAN FOR YEAR-ROUND OPERATION OF SCHOOLS IN PRINCE WILLIAM COUNTY, VIRGINIA

A Dissertation

Presented to

The Faculty of the School of Education

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by

James Colin Mounie

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A STUDY OF THE 45-15 CYCLED-ATTENDANCE

PLAN FOR YEAR-ROUND OPERATION OF

SCHOOLS IN PRINCE WILLIAM

COUNTY, VIRGINIA

by

James Colin Mounie

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Doctoral Committee

ABSTRACT

A STUDY OF THE 45-15 CYCLED-ATTENDANCE PLAN FOR YEAR-ROUND OPERATION OF SCHOOLS IN PRINCE WILLIAM COUNTY, VIRGINIA

by
JAMES COLIN MOUNIE

Statement of the Problem

The purposes of this investigation were to determine whether the 45-15 cycled-attendance plan for year-round operation of schools in Prince William County, Virginia, has accomplished what it was intended to accomplish; and to describe and delineate certain variables and relationships which influenced the outcome.

Design of the Investigation

The general method of research used in this study was descriptive and judgmental evaluation. The study examined relationships among the antecedent conditions, intents, modifications, and outcomes related to the 45-15 pilot program. The determination of congruence between intents and outcomes was accomplished by the relative comparison of the Prince William County nine-month schools and the four 45-15 pilot program schools.

Findings

Overcrowded schools, an increasing pupil population, and the defeat of a bond referendum brought the School Board to a consideration of the 45-15 plan. The 45-15 plan was implemented to serve as a pilot program; and a research design was constructed but did not generate data by February of 1972. The plan was intended to and in most instances did produce certain outcomes related to facilities, resources, and the educational program. Program modifications seemed to be the critical factor in whether the intended outcomes were realized.

Conclusions

The following outcomes of the pilot program were congruent with the intents for implementation: (1) a research design to evaluate the pilot program had been constructed, (2) the capacity of the pilot schools had been increased, (3) split-shifts were not in operation in any of the pilot schools, (4) overcrowding of the pilot schools had been alleviated, (5) resources for the pilot schools existed at the same per pupil level as for the nine-month schools, and (6) the revised curriculum and the 45-15 plan had been implemented simultaneously.

Two outcomes of the Prince William County 45-15 Plan were not congruent with the intents. The research effort did not generate data necessary to make the decision to continue, extend or terminate the program; and additional opportunities were not provided for remedial work, enrichment, and acceleration.

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Chapter 1

BACKGROUND AND PROBLEM

Since the beginning of the twentieth century (Johns, 1969), efforts have been made to reschedule the traditional nine-month school year. Growing from these efforts are rescheduling methods known as "year-round school" and "extended school year." The year-round school plans increased the number of days schools were in operation during a calendar year. They may require additional days of attendance by pupils. The extended school year plans required additional days of attendance by pupils, but did not operate year-round.

Educational and economic advantages and disadvantages have been attributed to all of the extended school year and year-round school plans (Schoenfeld, 1964; Quick, 1966). Several investigators have concluded that cycled-attendance year-round plans are the most likely to result in financial savings while maintaining educational program quality (Elam, 1968; Glinke, 1971; Thomas, 1972).

Cycled-attendance plans are year-round school plans designed to use the school plant, educational program, and resources throughout the twelve-month calendar year without necessarily increasing the number of attendance days for each pupil. The cycled-attendance plans divide the pupil population into four or more groups and students are assigned to each group. One group of pupils is in the vacation phase while all other groups of pupils are in the attendance phase at any given time during the twelve-month calendar year.

Since 1904, cycled-attendance plans have been implemented and discontinued (Quick, 1966). From the beginning of 1970, cycled-attendance plans have been studied by investigators from 600 school districts (Driscoll, 1971). Many of these studies were inspired by the Valley View 45-15 Year-Round Plan. In 1970, Valley View, an elementary school district in Illinois, implemented the 45-15 plan in all of its elementary schools.

In March of 1972, there were modified versions of the 45-15 cycled-attendance plan for year-round school operating in four states. The Francis Howell School District in St. Charles County, Missouri had the plan in one 300 pupil elementary school. The LaMesa-Spring Valley and Chula Vista School Districts in California were each operating the plan in three elementary schools. In Illinois, the Valley View elementary school district and three Chicago elementary schools were operating under the same plan. In Virginia, Prince William County was conducting a pilot program with three elementary and one middle schools. The focus of this investigation is the 45-15 cycled-attendance plan in Prince William County, Virginia.

In a review of literature and research related to the operation of the past cycled-attendance plans, no definitive evidence was found to substantiate claims of benefits or shortcomings of the plan.

Statement of the Problem

The purposes of this investigation were twofold: (1) to

determine if the 45-15 cycled-attendance plan in Prince William County, Virginia, has accomplished the purposes for which it was implemented; and (2) to describe and delineate variables and relationships which influenced the outcome. To accomplish these purposes, the investigator sought: (1) to describe certain antecedent conditions, implementation intents, program modifications, and implementation outcomes; (2) to delineate relationships between the described factors; and (3) to determine the congruence between what was intended and what occurred as a result of the implementation of the 45-15 plan.

Importance of the study. Because little empirical evidence was found to substantiate the claims of the proponents or detractors of the cycled-attendance plans, this study may make a contribution to the sum total of knowledge of the year-round operation of schools. From a practical point of view, the findings could prove helpful to educators considering the implementation of a cycled-attendance plan.

Theoretical constructs. This study was based on five constructs related to the 45-15 plan:

1. The School Board intents for the implementation of the plan were related to the existing demographic, economic, and educational conditions.

2. Program modifications were related to Board intents for the implementation of the plan.

3. The outcomes of the pilot plan were related to the modifications of the program.

4. The outcomes of the pilot plan were related to the antecedent demographic, economic, and educational conditions.

5. The Prince William County School Board and administrative staff made an effort to achieve congruence between intents for implementation and the outcomes of implementation of the plan.

Delimitations. Demographic, economic, and educational conditions were those that existed before July of 1971. The prior educational conditions were limited to receipts and disbursements of operational and capital funds; to the pupil population; to the number of school buildings; and to the number of administrative, teacher, and service positions.

Definition of Terms

In much of the literature and research related to this study, the terms "rescheduled school year," "year-round school," "extended school year," and "all-year school," are used interchangeably. Analysis of the literature reveals that the terms are not interchangeable; rather, they are discrete concepts. For that reason, the terms basic to this study are defined as follows.

Rescheduled school year. This term refers to the methods used to modify the traditional nine-month, 180 day, school year. The rescheduling may affect either facility use, the length of pupil attendance or both. The basic means of rescheduling the school year are the extended school year and the year-round school.

Extended school year. As used in the study, this term refers to any plan designed primarily to substantially increase the actual number of days pupils attend school.

Year-round school. The term refers to the use of the school plant, the educational program, and educational resources throughout the twelve-month calendar. The year-round school may require pupil attendance for any portion of or all of the twelve months. The term "all-year school" is used interchangeably with year-round school.

Cycled-attendance plans. A category of year-round school plans designed for the twelve-month operation of school plant, program, and resources without necessarily increasing the number of attendance days for each pupil. The plans divide pupil populations into four or more groups and students are assigned to these groups. One group of pupils is in the vacation phase and all other groups of pupils are in the attendance phase at any given period during the twelve-month calendar. The cycled-attendance plans include the staggered four-quarter plan, the 8-2 plan, and the 45-15 plan.

Staggered four-quarter plan. A cycled-attendance plan in which each of four cycled groups attends school for nine months (180 days) then is released for a three-month (60 days) vacation which completes the cycle for the group.

8-2 plan. A cycled-attendance plan in which each of five cycled groups attends school for eight weeks (40 days) then is released for a two-week (10 days) vacation which completes the cycle for the group.

45-15 plan. A cycled-attendance plan in which each of the four cycled groups attends school for nine weeks (45 days) then is released for a three-week (15 days) vacation which completes the cycle for the group.

Design of the Investigation

The general method of investigation was drawn from that technique developed by Stake (1966). The Stake Method was designed to evaluate educational programs to determine the congruence between program intents and outcomes, and to delineate the relationships among antecedent conditions, transactions, and outcome. The Stake Method was modified to allow the researcher to investigate: (1) the relationship between antecedent conditions and implementation intent, (2) the relationship between implementation intent and program modifications, (3) the relationship between program modifications and implementation outcomes, (4) the relationship between antecedent conditions and program outcomes, and (5) the congruence between intents and outcomes.

Sources of data. Data describing demographic and economic conditions were drawn from documents which described conditions prior

to July of 1971. Included were documents prepared by the Northern Virginia Regional Planning Commission, by the United States Bureau of the Census, by the Virginia Electric and Power Company, by the Bureau of Population and Economic Research, by the Prince William County Board of Supervisors, and by the Prince William County Planning Commission.

Data describing prior educational conditions were drawn from documents published by the Prince William County School Board and by the Virginia State Department of Education. These documents described the pupil population, the operating budget, school plant facilities, school staff, and the administration. Specific reports included the "Principal's Monthly Report to the Superintendent," "The Virginia School Census," the "Annual School Report: Statistical Section" and the "Annual School Report: Financial Section," the "Prince William County Operational Budget," the "State Department of Education: School Building Information Report," and the "Report of the Superintendent of Public Instruction."

Data describing intents for implementation of the 45-15 cycled-attendance plan in Prince William County, Virginia, were obtained from publications that purported to be the rationale for the 45-15 program in that county. The documents included, "Year-Round Schools: Fact Book," "Information Sheet on Year-Round Schools," "Year-Round School Use Project," "Background Information Concerning the Prince William County School Board Request for Funds to Implement a Pilot Year-Round School Use Operation in 1971-1972," "Year-Round

School Start-Up Cost," "No Time to Waste: The Educational Space Race Is On." To supplement these data, interviews were held with staff personnel responsible for program development and implementation.

Data describing modifications of procedures, programs, and resources which resulted in the implementation of the cycled-attendance plan were found in the aforementioned documents describing intents for implementation. Interviews with the staff personnel responsible for program development and implementation of the 45-15 plan were used to supplement these data.

Data describing congruence between intents and outcomes were found in documents that reported student enrollment, resource and personnel allocations, plant capacity, curriculum materials, calendars, research design and research findings as of March, 1972. These data were supplemented by interviews with staff members responsible for operation and evaluation of the 45-15 cycled-attendance program.

Treatment of data. Descriptive data were processed in the manner represented in Figure 1. The flow-chart was used to delineate the logical and empirical relationships between antecedent conditions and intents, intents and program modifications, program modifications and outcomes, antecedent conditions and outcomes; and to determine the congruence between intents and outcomes. Descriptive data for each of these factors were related to the flow-chart and analyzed to determine their relationships with other factors.

The judgmental component of the study was based on the

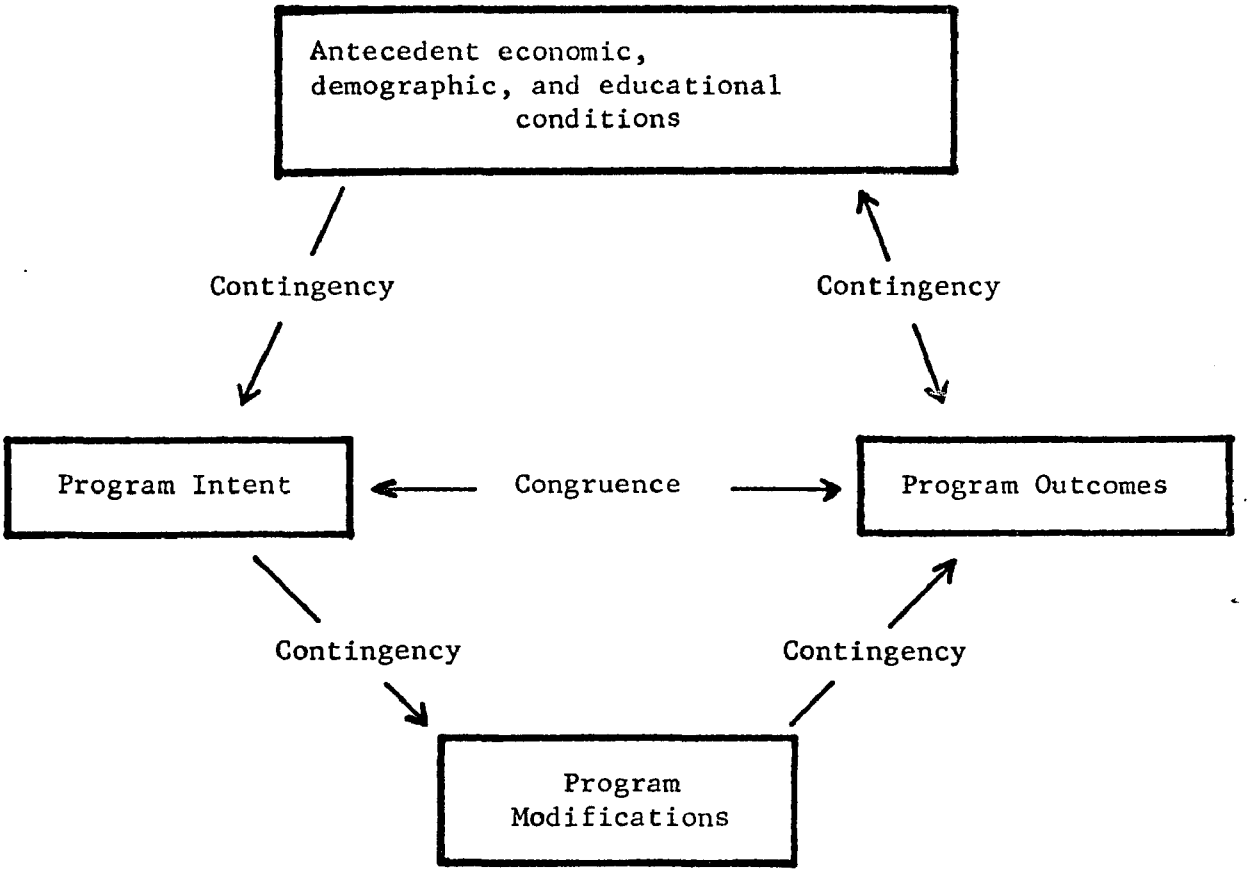

Figure 1

A Flow-Chart for the Processing of Descriptive Data to Identify Empirical and Logical Relationships in the Prince William County 45-15 Cycled-Attendance Plan

criterion of logic and empirical data in the identification of relationships. An example of logical and empirical relationship would be an intent to modify the curriculum consistent with the 45-15 calendar, the production of nine-week curriculum units, and the actual use of nine-week curriculum units. In this example, the empirical evidence of relationship would be the data relevant to intent, curriculum modification, and use of the modified curriculum. The logical relationship would be that an intent influenced the effort which, in turn, influenced the outcome. Should the program modification be inconsistent with what was intended, and the outcome incongruent with the intent, the logical and empirical conclusion would be that the inadequate program modification influenced the lack of congruence.

The process used in the determination of congruence between intents and outcomes is represented in Figure 2. The chart was used to analyze descriptive data from the Prince William County elementary schools operating on the traditional nine-month calendar and the four schools operating on the 45-15 calendar. Judgments were made, therefore, on the basis of a relative comparison of the data. The data from traditional calendar schools provided the criteria for judgments relative to the 45-15 pilot schools. To illustrate, if an intent should have been to maintain pupil-teacher ratios for the 45-15 schools at the same level as the traditional calendar schools, the congruence criteria would have been the pupil-teacher ratios for the traditional calendar schools.

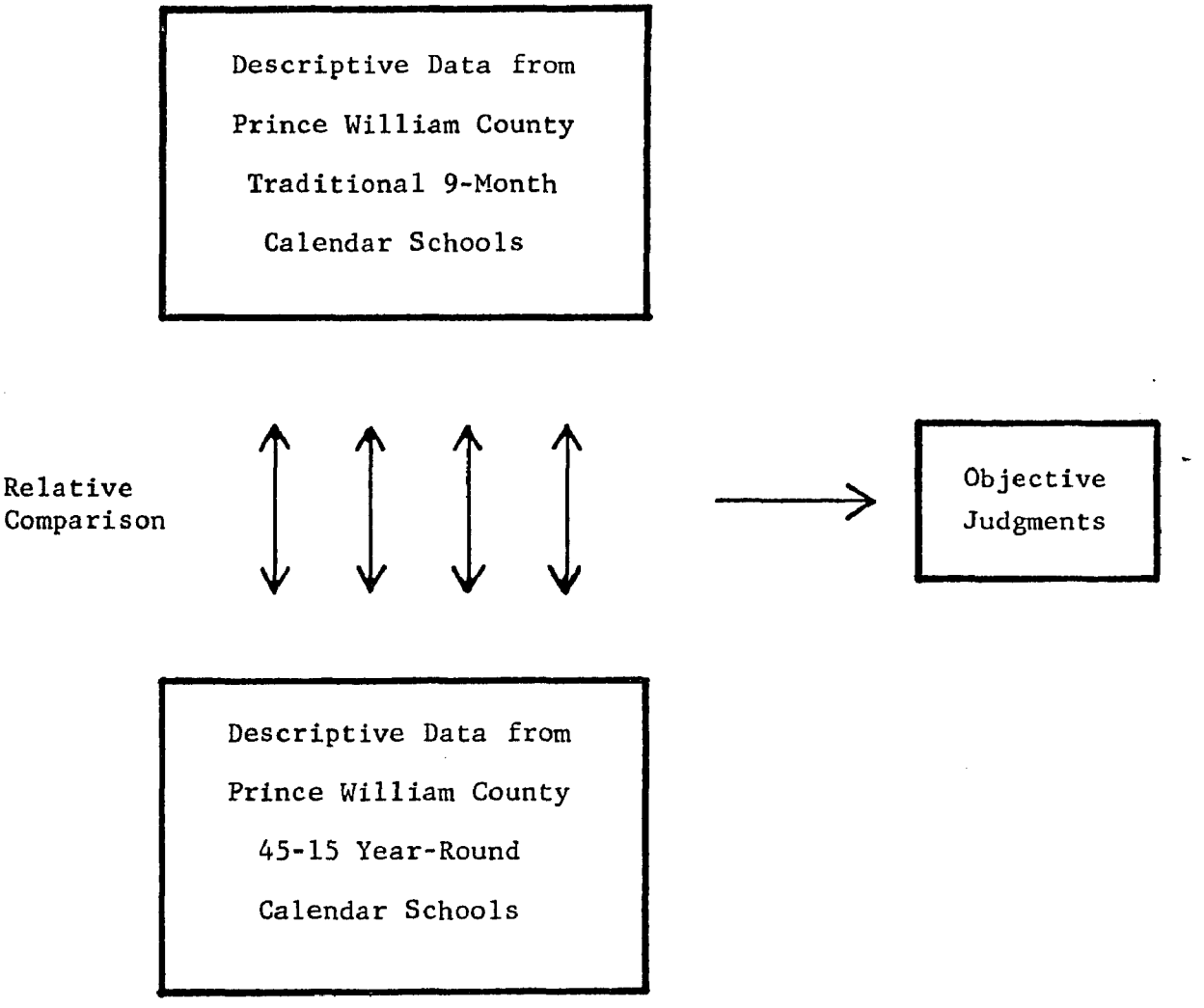

Figure 2

A Flow-Chart of the Judgmental Process Used to Analyze Descriptive Data Relevant to Congruence in the Prince William County 45-15 Cycled-Attendance Plan

Organization of the Remainder of the Study

In Chapter 2 a review of related literature and research is presented dealing with general considerations of the cycled-attendance plans and specific review of the staggered four-quarter plan, the 8-2 plan, and the 45-15 plan. Chapter 3 reports the analysis of the data. In Chapter 4 the conclusions of this study, and recommendations for other investigations are presented. Chapter 5 is a summary of the entire study.

Chapter 2

RELATED LITERATURE AND RESEARCH

The literature and research related to the present study are grouped under four major headings: (1) Cycled-Attendance Plans, (2) Staggered Four-Quarter Plan, (3) 8-2 Plan, and (4) 45-15 Plan.

Cycled-Attendance Plans

Few authors were found who have written about the cycled-attendance plans for year-round operation of schools. Their analyses were limited to a study of literature relevant to the staggered four-quarter and 45-15 plans. Most conclusions were based on logical assumptions rather than empirical evidence.

As a result of their study of the history of the year-round operation of schools, McLain (1969) and Thomas (1972) reported that the cycled-attendance plans originated with the staggered four-quarter plan which Quick (1966) indicated was first introduced in Aliquippa, Pennsylvania. Hermansen and Gove (1971) and Thomas (1972) have pointed out that later cycled-attendance plans were developed to counter public resistance to extended winter vacations mandated in staggered four-quarter plans.

Although the writings of McLain (1969) and Thomas (1972) revealed the origins of the cycled-attendance plans, their primary emphasis was on economic considerations. McLain (1969) presented a hypothetical cost comparison that was intended to show how the

cycled-attendance method would have influenced the total United States public school expenditures of $12,952,000,000. in fiscal year 1960. His analysis was based on the belief that the cycled-attendance plans would allow the housing of an increase of 33-1/3 percent in the pupil population in existing facilities permitting a 25 percent decrease in the need for additional personnel, facilities, and equipment. McLain concluded that, ". . . the estimated impact of operating the schools all year on the operational budget is from a slight increase (0.2 percent) to a 3.4 percent decrease." He cautioned that unless the student population was equally divided in attendance groups the pupil-teacher ratio ". . . would have to be adjusted to the convenience of the schedule, which could negate any savings otherwise gained."

As a result of his appraisal of the concept of cycled-attendance, Thomas (1972) averred that the cycled-attendance plans could create an atmosphere for improving the quality of education without increasing school costs. Thomas claimed that he had concluded logically that the cycled-attendance plans could lead to savings through a reduction in the number of teachers, supportive personnel, school buses, material, equipment, and school plants. He maintained that fewer school plants could result in an increased savings because:

> . . . As a general rule cost analysis studies show that all new costs can be more than offset by the savings obtained by the reduced need to maintain new school buildings or by the closing of existing schools. In terms of recent average per pupil operation and maintenance costs of $103. per year the elimination of a new 2,000 pupil school . . . creates a potential saving in operation and maintenance costs of approximately $206,000. This

> can go a long ways towards offsetting new costs, even with the introduction of air-conditioning and the resulting increase in utility costs.

The contention by Thomas (1972) that the cycled-attendance plans do not require transition period appropriations in addition to usual expenditures, is not consistent with reports of start-up costs for 45-15 plans. Plank (1971) reported that Valley View spent $347,900. to provide air-conditioned facilities, to support staff committee work, and to obtain consultant help. The Prince William County School Board (1971) reported expenditures of $472,500. for public information, curriculum revision, staff orientation, and school plant preparation to support its 45-15 plan.

Other conclusions about the cycled-attendance plans were presented in a Michigan Department of Education (1971) report to the legislature of that state. The report was a summary and synthesis of six different studies in eight Michigan school districts to determine the feasibility of year-round schools and an extended school year. Among the plans investigated were the cycled-attendance plans which were studied by the Port Huron, Northville, Utica, and Ann Arbor school districts. The plans were investigated by the relative comparison of the traditional nine-month school operation and school operation under the cycled-attendance plans. The studies compared cost, program, and convenience to determine whether the plans were feasible. Included were the following tentative conclusions drawn from the data: (1) cycled-attendance plans are more feasible for large, rapidly growing school systems; (2) as the potential for saving money under a

year-round plan increases, there is, also, an increase in inconvenience to family and community life; (3) cycled-attendance plans that increase vacation options are more acceptable to parents; and (4) the degree of increased use of school buildings are highest with mandated cycled-attendance plans.

The Michigan (1971) report supported the contention of McLain (1969) that the vacation phases of cycled-attendance plans are disruptive, potentially, to family and community life. In addition to determining the feasibility of the cycled-attendance plans, the Michigan school districts sought to determine acceptability of the plans to various segments of the communities. Each of the school districts conducted a survey to determine vacation preference for certain groups. Port Huron reported that 66 percent of the professional staff preferred summer vacations. Ann Arbor reported that 69 percent of the students, 53 percent of the professional staff, and 61 percent of the parents preferred summer vacations. Northville reported that 84 percent of students, 59 percent of the professional staff, and 71 percent of the parents preferred summer vacations. Utica reported that 88 percent of the total community preferred summer vacations, but 75 percent would agree to take nonsummer vacations if the entire family was able to do so.

After reviewing the educational implications of the cycled-attendance plans, Thomas (1972) concluded that they could create an atmosphere in which the educational program could be improved. McLain (1969) supported that contention by stating that while the

plans, in themselves, would not have a major impact on the quality of educational programs, the programs could be improved as a part of a change to the year-round calendar.

Staggered Four-Quarter Plan

The staggered four-quarter plan for the year-round operation of schools has been the focus of much attention since the beginning of the twentieth century. Quick (1966) wrote that the staggered four-quarter plan was introduced on a voluntary attendance basis in Bluffington, Indiana, in 1904 and by 1925 it was operating in thirteen states. Scala (1968) pointed out that the staggered four-quarter plan to mandate the cycled-attendance for four relatively equal sized pupil groups was begun in Aliquippa, Pennsylvania in 1928. Ogden (1956) reported that every community which attempted the plan had abandoned it by 1950; yet, the staggered four-quarter plan was still being studied in 1972 by investigators from 600 school districts (Driscoll, 1971). Because there have been no staggered four-quarter plans in operation since 1950, investigations since that time have been limited to analyses of reports and writings of persons involved in the operation of earlier plans.

Quick (1966), Varner (1968), and Scala (1968) concluded from their analyses of literature on the Aliquippa and Ambridge, Pennsylvania, staggered four-quarter plans, that it was intended from its inception to achieve economy of operation. Their analyses led them to conclude that the increased use of facilities was expected to

result in a reduced need for the construction of new buildings and the attendant capital outlay and debt services.

Vanderslice (1930), Superintendent of Aliquippa during the period the staggered four-quarter plan was in operation, reported that the largest item of economy in the plan was the savings in debt services which he reported came to $282,059. over a seven-year period. As a result of his review of the literature, Schoenfeld (1964) found that in the Aliquippa Plan the anticipated and reported decrease in costs had not been documented.

To determine the potential impact of the staggered four-quarter plan on the capital expenditures of the Utica, Michigan Community Schools, Glinke (1970) used pupil population projections to estimate the student housing needs from 1971 to 1980 for that school district. He projected that the capacity of existing school plant facilities would increase approximately 33 percent under the staggered four-quarter plan where 75 percent of the students were in attendance each quarter. As a result of his comparison of building needs under the traditional nine-month calendar and the staggered four-quarter plan, Glinke (1970) reported that the staggered four-quarter plan could save nearly $100,000,000. in construction costs during the years of 1971 to 1980. Using the same premises as those used by Glinke, a Citizens Committee of the Sequoia Union High School District (1960) and Elam (1970) in a study for Port Huron, Michigan, concluded that the plan had the potential for capital savings. Insufficient data were reported supporting the Glinke and

Sequoia claims.

The Sequoia Committee (1960) projected operating expenditures for the school district in 1960 of $4,782,952. for the traditional nine-month year, and projected $6,006,486. if the staggered four-quarter plan, with an increase of approximately 33 percent in the pupil population were implemented. The anticipated savings were more apparent when the costs for the two plans were translated to per pupil expenditures. The same committee projected the traditional year plan cost as $560.52 per pupil and the staggered four-quarter plan cost as $549.94 per pupil. With no data to support its conclusions, the committee projected the following cost to provide an increased pupil population: (1) administration, 8 percent increase; (2) teacher salaries, 33 percent increase; (3) noncertificated personnel salaries, 28 percent increase; (4) auxiliary services, 8 percent increase; (5) operation and maintenance, 8 percent increase; (6) fixed charges, 20 percent increase; and (7) transportation charges, 50 percent increase.

Several investigators have disagreed with the conclusions that past programs have documented any savings or that the staggered four-quarter plan can result in savings. Lawrie (1961) reported that his analysis of literature relevant to the staggered four-quarter plan had shown that although the greater use of existing buildings would result in immediate savings, it could be assumed that increased maintenance costs would abrogate such savings.

Johns (1969) noted, after studying the economic implications

of the staggered four-quarter plan, his conclusions that the plan would not result in savings. He reported, ". . . As a matter of fact, this is the most expensive plan that has yet been proposed, assuming that the quality and quantity of the education program is not lowered." Offering no objective evidence supporting his conclusions, Johns estimated that the plan would increase school operation costs by more than 25 percent without increasing program quality.

Varner (1968) reported his analysis of the probable effects of the staggered four-quarter plan on the Atlanta, Georgia School System. He said the plan would have cost $8,804,000. while the cost of operation for the traditional school year and the cost of construction of needed new facilities would have totalled $7,617,000. Varner (1968) reported, further, that the Fulton County and DeKalb, Georgia, school districts cost analyses of the plan showed the staggered four-quarter plan to be more costly than continuation of the traditional year plan and construction of new buildings. Varner (1968) presented additional results of Los Angeles, Cincinnati and Florida State Department of Education studies which supported his position that there were no savings to be realized by the implementation and operation of the plan.

Lawrie (1961), Schoenfeld (1964), Scala (1968), and Conner (1972) agreed that conflict with parents was one of the major problems in the operational staggered four-quarter plans because the cycled-attendance plan interfered with summer vacations. There was general agreement among the aforementioned writers that this factor of summer

vacations was one of the primary reasons that the staggered four-quarter plans in Aliquippa and Ambridge were terminated.

The results of the Glinke (1971) survey conducted in Utica, Michigan, showed that the staggered four-quarter plan would still meet with community opposition to three months, nonsummer vacations. Glinke (1971) reported that even though the plan had the potential to save the Utica schools $100,000,000. over a ten-year period, opposition to the modification of the summer vacation precluded the implementation of the plan in the schools.

Hack (1962) arrived at two major generalizations from his study of the staggered four-quarter plan:

> . . . First there is a dearth of rigorous research on the topic. Those systems which have experimented with such a plan typically reported the mechanics of operation and some general reactions. The more recent feasibility studies were limited to theorizing and projecting. Second, even though there are no conclusive research findings, it appears that there is near unanimity in rejecting the four-quarter . . . plan.

8-2 Plan

McKague and Penner (1970) devised the 8-2 plan, based on a 200-day school year, to increase the utilization of existing buildings by 20 percent, yet allow all students to take part of their vacation during the summer months. While the 8-2 plan was devised for the Saskatoon, Saskatchewan Public Schools, it was never implemented.

A salient feature of the McKague and Penner study was their comparative analysis of the operational costs of the proposed 8-2 plan and the traditional school year program for the Saskatoon Public

Schools. Table 1 presents the actual costs of operation for the Saskatoon traditional school year program, the estimated cost of the 8-2 plan with the same enrollment, and the percent of increase by budgetary line item for 1969. These authors concluded that the 8-2 plan would have resulted in expenditures of 4 percent additional funds. While actual expenditures did not differ from estimated costs in most instances, it was projected that professional salaries would have increased 5 percent because of an increase in the number of teachers. Administrative salaries would have increased 8 percent due to the employment of one person to coordinate the plan. While their reasoning was not clear, they concluded that clerical salaries, light and power, water, vehicle operation, equipment service contracts, furniture and equipment, and building improvements would have increased by 20 percent because of 20 percent increased utilization.

45-15 Plan

In the literature covering the 45-15 plan, investigators have reported that the school districts operating on the plan in 1972 implemented it primarily as an alternative means of housing the pupil population. Hermansen and Gove (1971), the developers of the Valley View 45-15 Plan, stated that ". . . like Aliquippa and Ambridge, the Valley View Plan had its origins in a shortage of classrooms. It was undertaken primarily as a school 'housing' device." They reported that their development of the Valley View 45-15 Year-Round School Plan was:

Table 1

Costs of Operation of Saskatoon Public Schools in 1969 and Estimated Costs of the 8-2 Plan for the Same Year

Item	Actual cost 1969 ($)	8-2 cost 1969 ($)	Percentage of increase
Administrative salaries	188,260.61	204,260.61	8
Professional salaries	5,353,136.29	5,620,793.09	5
Substitutes	60,154.10	60,154.10	. .
Administrative clerical salaries	115,486.25	115,486.25	. .
School clerical salaries	87,423.93	104,907.92	20
Caretaker salaries	444,790.43	444,790.43	. .
Maintenance salaries	99,302.53	99,302.53	. .
Maintenance supplies	38,581.65	38,581.65	. .
Maintenance department contracts	18,676.79	18,676.79	. .
Employee benefits	57,732.77	57,732.77	. .
Classroom supplies	130,126.55	130,126.55	. .
Caretaker supplies	31,785.64	31,785.64	. .
Office supplies	21,835.17	21,835.17	. .
Special education	14,997.09	14,997.09	. .
Library supplies	5,721.08	5,721.08	. .
Library books	104,855.71	104,855.71	. .
Teaching aids	94,876.75	94,876.75	. .

Table 1 (continued)

Item	Actual cost 1969 ($)	8-2 cost 1969 ($)	Percentage of increase
Special programs	230.26	230.26	. .
Health services	2,288.81	2,288.81	. .
Rent	5,080.00	5,080.00	. .
Municipal taxes	12,751.85	12,751.85	. .
Insurance	15,738.91	15,738.91	. .
Fuel	67,191.47	67,191.47	. .
Light and power	99,654.15	119,585.15	20
Water	40,981.93	48,934.70	20
Vehicle operating costs	29,011.26	34,813.00	20
Administrative travel	4,037.48	4,037.48	. .
Student transportation	7,393.00	7,393.00	. .
Professional development	64,051.73	64,051.73	. .
Board expenses	11,823.04	11,823.04	. .
Advertising and publicity	4,069.21	4,069.21	. .
Debenture costs	809,499.90	809,499.90	. .
External professional services	5,962.19	5,962.19	. .
Subscriptions and dues	661.37	661.37	. .
Bank charges	17,093.37	17,093.37	. .
Telephone and postage	16,275.13	16,275.13	. .

Table 1 (continued)

Item	Actual cost 1969 ($)	8-2 cost 1969 ($)	Percentage of increase
Equipment service contracts	7,021.90	8,425.90	20
Sundry expense	971.91	971.91	. .
Sundry grants	1,909.25	1,909.25	. .
Teaching equipment and materials	55,224.14	55,224.14	. .
School furniture and equipment	35,426.80	42,511.80	20
Vehicles	10,304.51	10,304.51	. .
Sites	4,707.17	4,707.17	. .
Building improvements	46,882.57	56,258.00	20
Contingency reserve	200,000.00	200,000.00	. .
Total	8,443,968.69	8,796,677.43	4
Number of students	15,500	15,500	
Cost per student	544.77	567.52	

Source:

McKague, Tereno R., and Glen H. Penner. 1970. "Rescheduling the School Year: A Feasibility Study for Saskatoon Public Schools." Saskatoon, Saskatchewan: Department of Education. [Mimeographed. Reprinted with permission.]

> . . . dictated by seemingly insurmountable conditions. The school district had completely exhausted its bonding power. In addition to an almost unbelievable geometric progression in enrollments, it was faced with a new crisis created by the Illinois Legislature. In 1968, the 75th General Assembly made kindergarten mandatory in all public schools in the State. To District 96, this meant imposition of an additional classroom load of more than 800 kindergarten age children on what was already an overburdened school plant.

Runge (1971), Superintendent of the LaMesa-Spring Valley School District, claimed that the LaMesa-Spring Valley 45-15 Plan was implemented as a pilot program because the staff and community were searching for improved ways of educating children and for increasing the use of buildings and equipment. He reported that in the LaMesa-Spring Valley Plan available classrooms were generated and when operating at full capacity, three schools could house the equivalent of four school populations.

The 45-15 plan investigators have concluded that there is a potential in the plan for savings in operating and capital outlay expenditures. Hermansen and Gove (1971) wrote that with the 45-15 plan, the cost of education had not increased in Valley View. A projection of estimated costs for the 1970-1971 school year indicated that a 2- to 5-percent reduction in the total cost of educating each child would result. The average teacher salary increased between 19.5 and 27 percent. The administrators reported that there were no increases in custodial staff and no substantial increases in maintenance overtime because of 45-15. While Hermansen and Gove (1971) indicate that cost variations for transportation are difficult to determine, it was anticipated that they would increase. Because of

special costs and studies, the Valley View administrators could project only that administrative costs would not increase proportionately with enrollments under the plan.

The implementation of the plan in Valley View increased building capacities from 4,800 pupils to 6,400 pupils. The increased capacity eliminated the need for two new school buildings at a projected cost of $3,360,000. The debt service of $3,360,000. over twenty years would have made the total savings (Hermansen and Gove, 1971) between $5,000,000. and $6,000,000.

Much emphasis has been given to the educational implications of the 45-15 plan. Runge (1971) explained that while the shortage of classroom space provided the catalyst for the LaMesa-Spring Valley Program, the improvement of the educational program was the overriding motivation.

To measure student performance and attitude under the Valley View 45-15 Plan, Rogge (1970) reported that a sample of 736 students, grades one to six, was chosen to establish base line data for achievement. The research design required testing over a three-year period in the Valley View schools and in a control school district operating on the traditional calendar. The control district was to have been selected to correspond to Valley View with respect to socioeconomic composition. The experimental group attended school on the 45-15 calendar.

Although the post-test data from the study were not available in May of 1972, Rogge (1970) drew unsupported conclusions from the

baseline data. Among the conclusions which Rogge felt he could draw from the baseline data from the Valley View plan were: (1) one-third more space was immediately available through the 45-15 plan, (2) immediate savings can result if enrollment is rising rapidly or pupil debt service is high, (3) educational benefits immediately result if overcrowding or double shifts are prevented, (4) the community can be won over to the support of the four fifteen-day vacation periods, and (5) student scheduling was the most difficult administrative problem in implementing the plan.

Holzman (1971) conducted a case study of the Valley View 45-15 Plan and reported that while the plan affected primarily space utilization, ". . . the plan also affects student learning both beneficially and detrimentally." He accepted the reports of Valley View school authorities that the students had learned as much as they did under the traditional year plan with less boredom and restlessness as evidence of the beneficial effects of the plan. A deleterious aspect of the program is the focus of the statement by Holzman (1971):

> . . . as each group completes its 45-day learning period, another group begins. Often, if the teacher is working through the next 45-15 period, he will have a different group of children. And, conversely, when the first group of students returns to school from their 15-day vacation, they could very well have a different teacher . . . . This continuous switching of teachers and pupils naturally restricts flexibility of curriculum, individual help and recognition, and correction of weaknesses. The most distressing part of the system is that the student-teacher relationship has become impersonal.

O'Dell (1970) pointed out that it has been generally agreed by school officials, evaluation teams, parents, students, and teachers

that the 45-15 plan in the Becky-David School was not inherently detrimental to children. This conclusion was not, however, supported by the Becky-David test data. These data supported the following conclusions:

> . . . 1) Fifth and sixth grade pupils do equally as well under the year-round schedule as those attending a school with a traditional nine-month schedule.
> 2) Fourth grade pupils achieve less well in a year-round schedule than in a traditional nine-month schedule.

Hermansen and Gove (1971) wrote that the major problems encountered in the implementation of the 45-15 plan in the Valley View School District were: (1) drafting legislation necessary to permit operation of the plan, (2) the complexities of scheduling pupils and teachers in different capacities four times a year, (3) securing the understanding and support of the community, (4) contract negotiations with the teachers professional association, and (5) designing and executing an objective evaluation of the educational impact of the 45-15 plan.

From their observations of the Valley View 45-15 Plan, Hermansen and Gove (1971) concluded that the plan: (1) reduced teacher turnover, (2) increased the retention of learning, (3) increased flexibility for individualized instruction, (4) increased teacher salaries, (5) provided no spectacular savings in operation, (6) increased costs in transportation, and (7) increased the use of support facilities, equipment, and materials.

Summary

A review of the literature and research related to the present

study revealed that the investigations of the cycled-attendance plans concentrated primarily on economic, educational, and sociological considerations. Although there are many areas where the investigations are in agreement, there is little empirical evidence to support the conclusions reached by most writers.

There was general agreement in the studies that school districts have implemented cycled-attendance plans to provide classroom space for rapidly increasing pupil populations. The investigators pointed out, also, that the plans resulted in savings in immediate capital outlay and debt services. But, there was little agreement about whether the plans resulted in increased or decreased operational expenditures.

Not all investigators concluded that the cycled-attendance plans have the potential for improving or, at a minimum, maintaining the quality of education. Some writers reported that specific cycled-attendance plans have had undesirable effects on pupil learning.

Most reports have indicated that the cycled-attendance plans have had the potential to be disruptive of family and community living patterns. Analyses of the 45-15 plans have led researchers to conclude, however, that the four fifteen-day vacation periods in the 45-15 calendar have enjoyed generally greater support than the vacation schedules of the staggered four-quarter plan.

The literature and research related to this study presented no conclusive research findings about the economic, educational or sociological effects of the staggered four-quarter plan, the 8-2 plan,

or the 45-15 plan.

Chapter 3

ANALYSIS OF DATA

The results of the analysis of data are presented under four major headings: (1) Antecedent Conditions, (2) Implementation Intents, (3) Program Modifications, and (4) Implementation Outcomes.

Antecedent Conditions

The antecedent conditions are described under three subheadings: (1) Demographic, (2) Economic, and (3) Educational.

Demographic. Prince William County has a land area of 347 square miles. In the 1960 to 1970 decade the county increased from 50,164 to 111,102 a decennial growth rate of 121.5 percent. The county population grew at a faster rate than that of the State of Virginia which increased approximately 17.6 percent or that of the United States which increased 13.3 percent during the same period.

The net population growth of Prince William County from 1960 to 1970 was a result of two related processes: natural increase (the balance of births over deaths) and net migration (the difference between in-migration and out-migration). Table 2 shows that the natural increase was 19,699 and the net migration was 41,239 or 67.4 percent of the total net increase in population.

During the 1960 to 1970 decade, five Magisterial Districts in Prince William County had increases in population and two Magisterial Districts had decreases. The districts that experienced population increases were Brentsville (9,418), Coles (11,391), Gainesville

Table 2

Population Change and Components of Change, 1960-1970: Prince William County

1960 population	1970 population	Net growth	Net migration	Natural increase	Net growth (%)	Net migration (%)	Natural increase (%)
50,164	111,102	60,938	41,239	19,699	121.5	67.4	32.2

Source:

U.S. Department of Commerce. Bureau of the Census. Bureau of Population and Economic Research, University of Virginia.

(14,382), Occoquan (4,928), and Neabsco (27,924). The districts that experienced a decline in net population were Dumfries (-4,551) and Manassas (-2,574). While data related to the net population change for the Magisterial Districts are incorporated in Table 3 the relative percentage of change for each district from 1960 to 1970 is presented in Figure 3.

Figure 4 encompasses data which show that the non-white population increased from 4,132 in 1960 to 6,968 in 1970 for a net increase of 2,836. The relative number of non-whites in Prince William County decreased, however, from 8.2 percent of the total population in 1960 to 6.2 percent in 1970. Table 4 indicates that the 1970 non-white population was distributed among the district with the largest number in Gainesville (1,323) and the smallest number in Occoquan (720). When the non-white population of the districts was considered in relative comparison to the white population, the range of differences was from 15.6 percent in the Coles district to 4.6 in the Neabsco district.

Data in Table 5 indicate that the percentage of males in the Prince William County population decreased from 53.8 percent in 1960 to 51.3 percent in 1970. During the same period the percentage of females in the total population increased from 46.2 percent to 48.7 percent. For the total population, the median age decreased from 22.3 years in 1960 to 21.8 years in 1970.

Economic. The Board of Supervisors for Prince William County

Table 3

Actual Change in Population Totals for Magisterial Districts

District	1960 population	1970 population	Net change
Brentsville	2,499	11,917	9,418
Coles	1,667	13,058	11,391
Dumfries	17,452	12,901	- 4,551
Gainesville	2,941	17,323	14,382
Manassas	15,946	13,372	- 2,574
Neabsco	. .	27,924	27,924
Occoquan	9,659	14,607	4,948

Source:

U.S. Department of Commerce. Bureau of the Census.

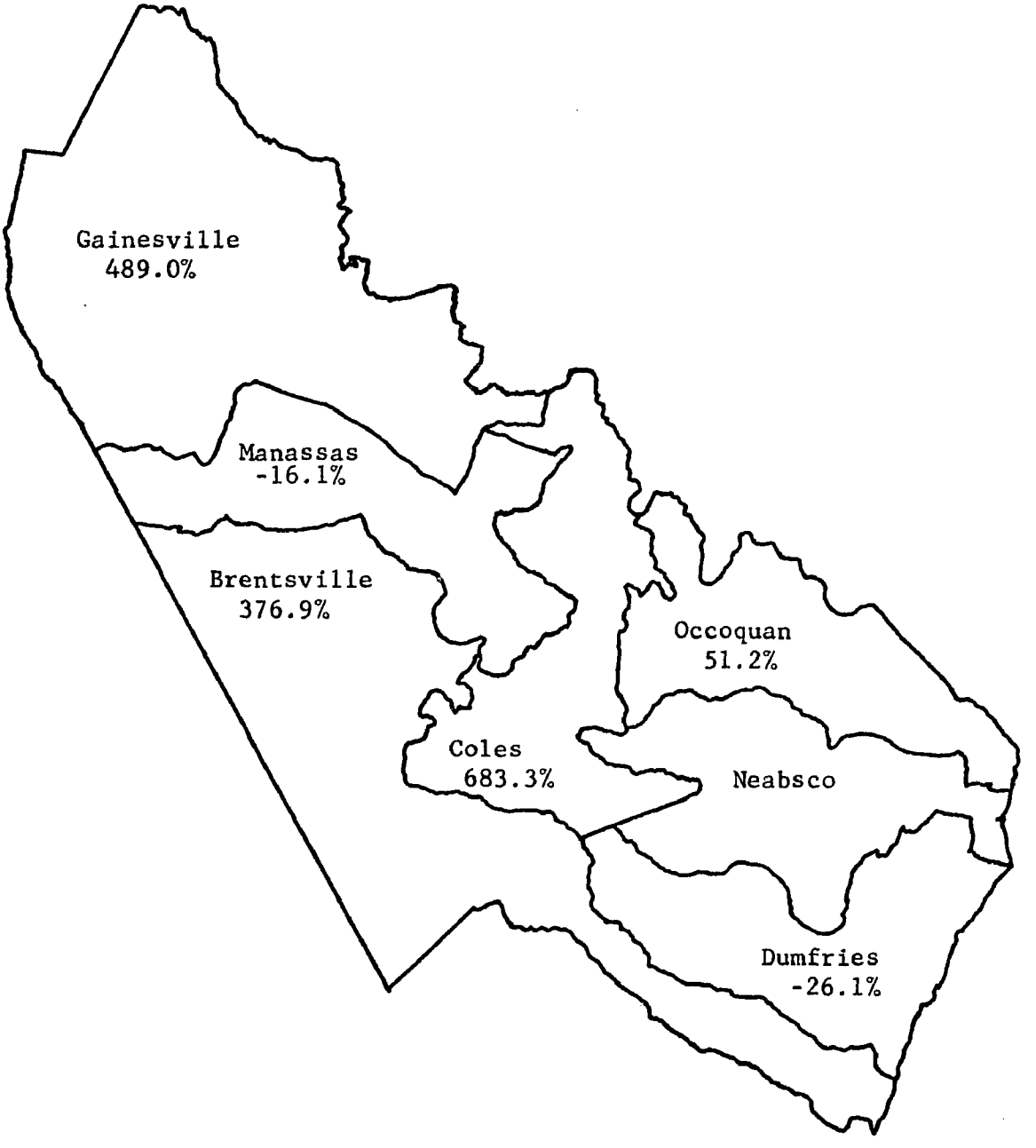

Figure 3

Relative Change in Population Growth for
Magisterial Districts, 1960-1970

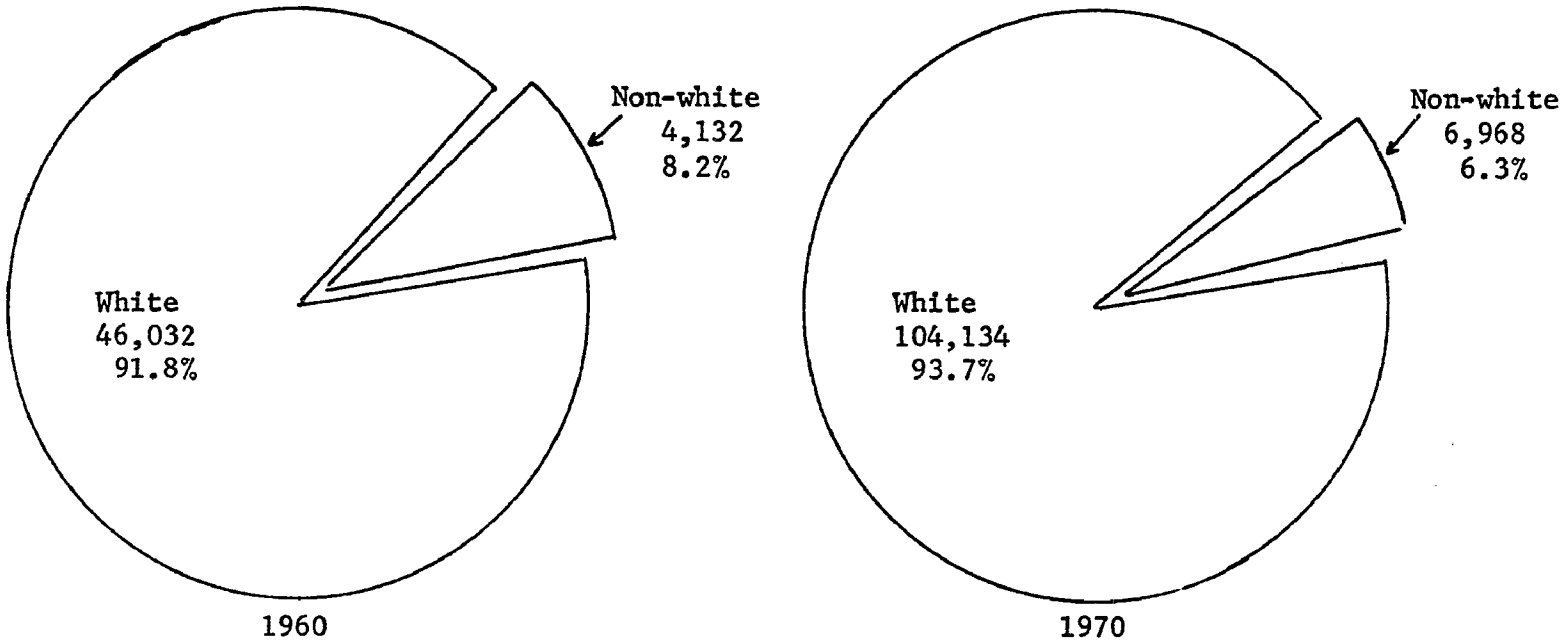

Figure 4

Racial Composition of Population
for 1960 and 1970: Prince
William County

Table 4

Composition of Magisterial Districts
Population by Race in 1970

District county	Number of white	Number of Negro	Number of other	Percentage of non-white
Brentsville	10,594	1,101	219	12.4
Coles	12,859	184	15	15.6
Dumfries	11,605	1,161	135	11.1
Gainesville	16,000	1,270	53	8.4
Manassas	12,389	948	35	7.1
Neabsco	26,797	948	182	4.6
Occoquan	13,887	635	85	5.6
County total	104,134	6,244	724	6.3

Source:

U.S. Department of Commerce. Bureau of the Census.

Table 5

Age and Sex Distribution of the Population
for Prince William County, 1960 and 1970

	1960		1970	
	male (%)	female (%)	male (%)	female (%)
Under 5	8.4	8.1	6.2	6.2
5-9	6.2	6.1	7.5	7.0
10-14	4.4	4.4	6.3	5.9
15-19	3.8	3.0	4.2	3.7
20-24	8.0	4.5	4.9	4.2
25-34	9.8	8.3	9.3	9.6
35-44	6.5	5.5	7.0	6.0
45-54	3.2	2.7	3.4	3.0
55-59	1.1	1.0	.9	.9
60-64	.8	.8	.6	.7
65-74	1.0	1.2	.6	.9
Over 75	.6	.7	.4	.6
Total	53.8	46.2	51.3	48.7

Source:

U.S. Department of Commerce. Bureau of the Census.

is statutorally responsible for the collection, management, and expenditure of all funds necessary to the operation of the County government. The Board of Supervisors is charged with the responsibility for funding the Prince William County Public School Division.

The assessed valuation of taxable property in Prince William County increased from $63,531,547. in 1961 to $221,370,458. in 1970. Taxable property data embodied in Table 6 indicate that the real property and personal property represented 74.1 percent of the tax base in 1970 compared to 54.5 percent in 1961. The assessed value of merchants capital, while increasing $9,274,753. decreased from 8.5 percent of the 1961 total taxable property to 6.1 percent in 1970. During the same period the taxable value of public service corporations increased by $18,269,186. but decreased from 37.9 percent of the total taxable property in 1961 to 18.2 percent in 1970.

While the relative importance of real and personal property increased, so did the rate of taxation. In 1970, the tax rate for all districts on real and personal property was raised from $5.65 to $7.00 per $100.00 of assessed valuation.

The real property in 1970 consisted primarily of single family homes. Figure 5 reveals that approximately 64 percent of the single family homes owned by occupants were in the $20,000. to $40,000. range.

Income of Prince William County residents steadily increased during the 1960 to 1970 decade. The gross personal income increased from $85,225,000. in 1960 to $340,100,000. in 1970. The per capita

Table 6

Assessed Valuation of All Taxable Property
1961-1970

Year	Real ($)	Personal property ($)	Merchant's capital ($)	Public Service Corp. ($)	Total ($)
1961	28,493,835.	6,311,963.	5,133,253.	23,592,496.	63,531,547.
1962	31,266,836.	7,032,618.	5,875,570.	28,930,721.	73,105,745.
1963	35,447,019.	7,254,777.	6,587,040.	33,888,884.	83,177,720.
1964	42,089,434.	9,433,748.	6,924,366.	35,799,171.	94,246,719.
1965	48,030,283.	10,417,689.	7,328,848.	37,664,527.	103,441,347.
1966	101,029,764.	9,414,501.	8,247,875.	40,152,102.	158,844,242.
1967	109,327,635.	10,193,166.	9,738,639.	39,514,803.	168,774,243.
1968	120,124,890.	11,255,015.	9,820,289.	41,016,141.	182,216,335.
1969	132,527,565.	17,940,494.	13,061,678.	40,543,948.	204,073,685.
1970	144,067,665.	21,033,105.	14,033,105.	41,861,682.	221,370,458.

Source:

Annual Reports of the Prince William County Board of Supervisors.

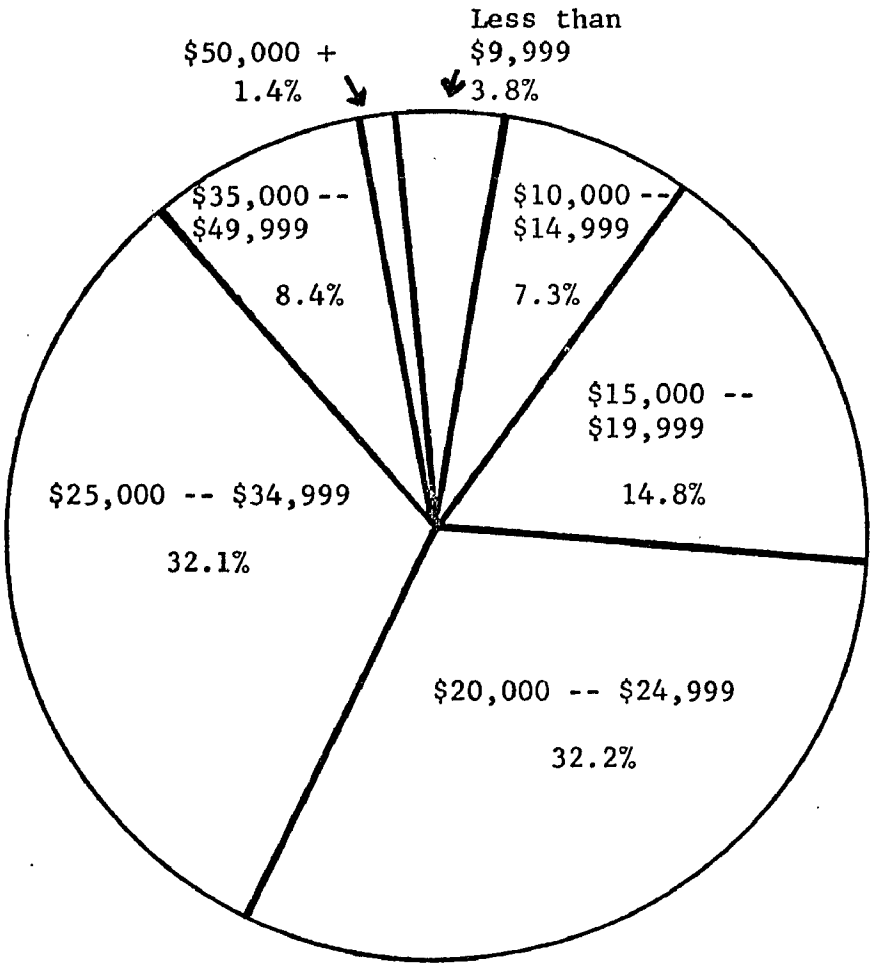

Figure 5

1970 Housing Value Profile of
Prince William County

personal income increased from $1,685. to $2,855. and the median family income increased from $5,468. to $9,481. during the decade.

In addition to the funds drawn from the local tax base, the Board of Supervisors is responsible for the management of certain state and Federal funds allocated to it for the operation of the County agencies and services. Table 7 embodies data that reveal all sources of funds and expenditures to conduct the affairs of the County during the 1965 and 1971 fiscal years. Local funds increased from $7,651,022.38 in 1965 to $18,610,272.62 in 1971. State funds increased from $3,210,657.80 in 1965 to $9,972,270.85 in 1971. Federal funds increased from $1,025,811.30 in 1965 to $2,699,301.32 in 1971. The total expenditures by the Prince William County Board of Supervisors increased from $21,667,607.01 in 1965 to $36,677,929.94 in 1971.

Educational. The school age population in Prince William County increased at a rate greater than that of the general population during the decade of 1960 to 1970. The school census date embodied in Figure 6 reveal that the six- through nineteen-year-old population increased from 10,057 in 1960 to 35,977 in 1971. The increase for the group from 1960 through 1965 was 14,376 persons for an increase of 243 percent. The 1965 through 1971 increase for the age group was 11,574 persons or 146 percent.

The school enrollment data for Prince William County for the years 1960 through 1971 are reported in Figure 7. The enrollment

Table 7

Comparison of Income and Expenditures
Prince William County,
1965 and 1971

	1965 ($)	1971 ($)
Income		
Local sources	7,651,022.30	18,610,272.62
State	3,210,657.80	9,972,270.85
Federal	1,025,811.37	2,694,301.32
Sale of bonds and borrowing	10,175,000.00	7,325,000.00
Total	21,904,991.47	38,601,844.79
Expenditures		
Operating funds	13,842,515.89	27,758,956.61
Construction funds	3,656,775.10	5,740,880.22
Debt service	4,168,316.02	3,178,093.11
Total	21,667,607.01	36,677,929.94

Source:

Annual Reports of the Prince William County Board of Supervisors.

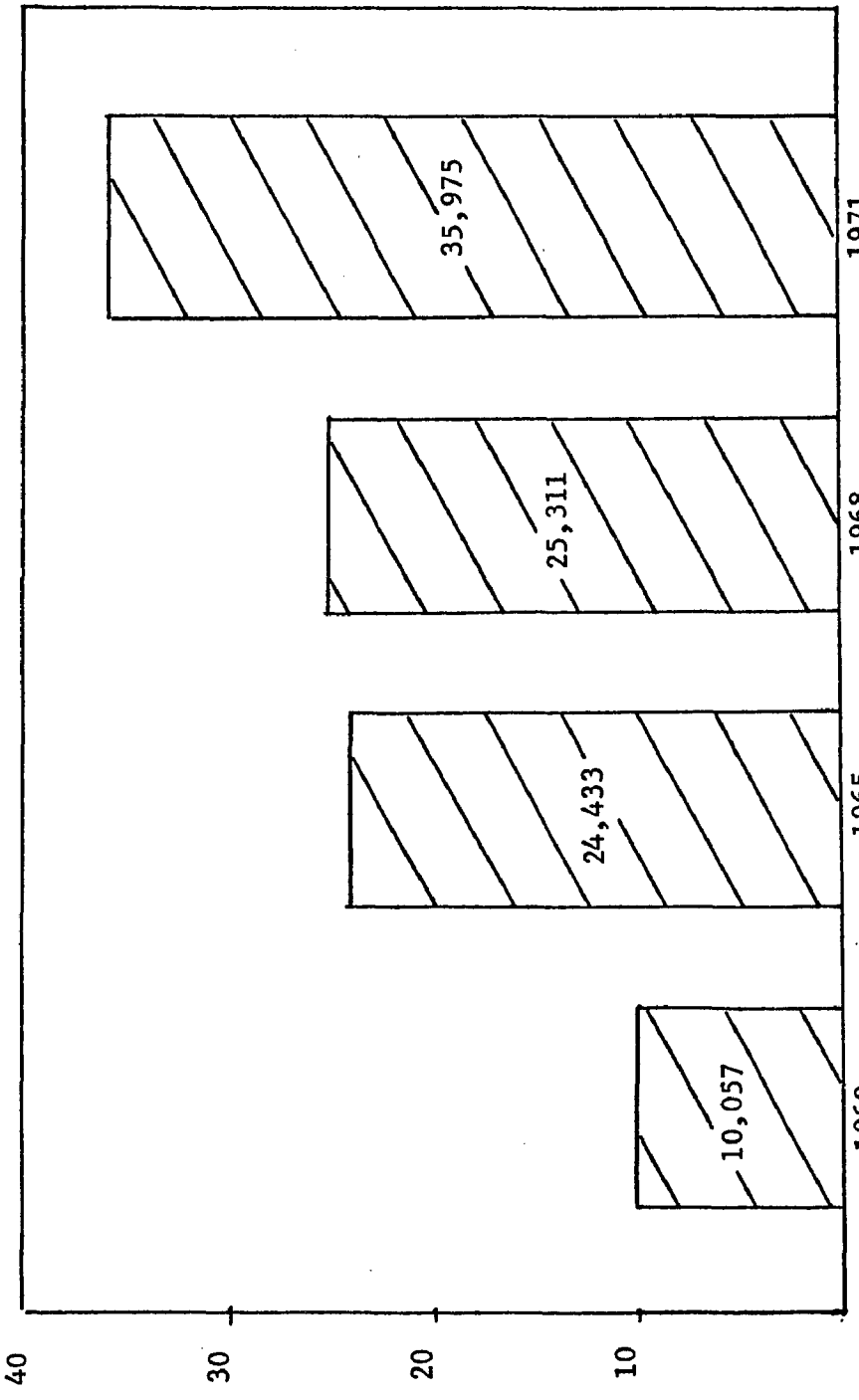

Figure 6

School Census Data for 6 to 19 Year Olds in Prince William County from 1960 through 1971

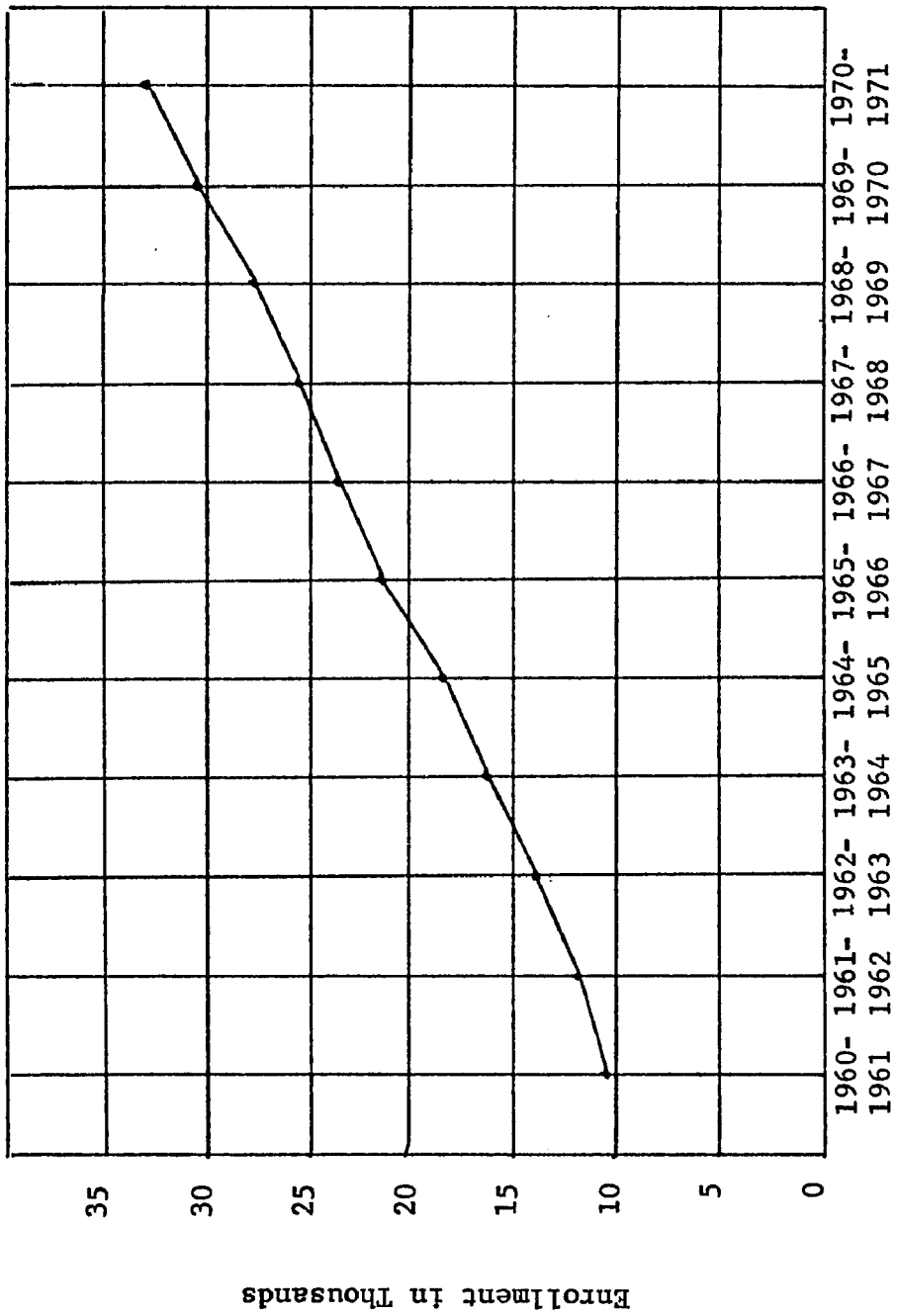

Figure 7

School Enrollment for Prince William County, 1960-1971

increased from 10,787 for the 1960-1961 school year to 33,019 for the 1970-1971 year for an increase of 365.8 percent.

Funding and expenditures of the public schools increased from 1960 to 1971. The data, encompassed in Table 8, indicate that the amount of funds which Prince William County received from the state government increased from $986,450. in 1960 to $7,497,534. in 1971. While federal funds increased from $323,269. to $2,576,575. during the same period, the greatest increased effort was the local county contribution which grew from $1,740,076. to $17,807,253. The percentage of increase from 1960 to 1970 was 759 percent for state funds, 731.3 percent for federal funds, and 1,023 percent for county funds.

From 1960 to 1971, the total expenditures for Prince William County Public Schools increased from $2,854,298. to $32,580,399. Included in the total city expenditures were disbursements for the operation of schools which increased from $2,566,130. to $23,359,837. during the eleven years for which data were presented.

Data for selected categories of operational disbursements from 1960 through 1971 found in Table 9, show the cost of administration increased $406,437. or 937.3 percent; the cost of instruction increased $14,599,242. or 877.1 percent; other instructional costs increased $1,633,927. or 1912.5 percent; the cost of maintaining school plants increased $1,677,023. or 849.7 percent; and fixed charges increased $382,223. or 1568 percent. Data incorporated in Figure 8 point out that when the costs of operation were broken down to per

Table 8

Sources of Funds for School Board Operational Budget
Prince William County, 1960-1971

Year	From state funds ($)	From federal funds ($)	From county funds ($)	From other funds ($)	Loans ($)	Total ($)
1960-1961	986,450.70	323,269.46	1,740,076.00	37,883.20	. .	3,087,679.36
1961-1962	1,231,952.86	460,637.93	1,936,076.00	53,585.00	16,879.99	3,699,131.33
1962-1963	1,374,085.42	1,024,201.89	2,496,381.00	58,471.07	881,383.61	5,834,522.99
1963-1964	1,888,741.04	662,956.29	3,155,090.00	47,972.28	7,040,593.00	12,746,360.81
1964-1965	1,956,798.79	781,220.75	3,786,592.00	44,688.20	4,063,750.00	10,633,049.74
1965-1966	2,598,379.40	1,017,231.37	4,922,999.00	49,774.08	5,102,023.61	13,690,402.46
1966-1967	3,761,673.09	1,928,215.30	4,981,054.68	57,343.86	5,000,307.00	15,728,618.93
1967-1968	4,657,160.03	1,752,047.04	7,257,026.52	65,625.14	5,111,223.34	18,843,132.12
1968-1969	5,357,609.91	2,453,425.26	9,683,403.26	66,866.32	3,024,919.31	20,580,224.38
1969-1970	7,386,032.72	2,229,754.56	11,489,123.11	58,758.79	2,692,666.00	23,856,335.18
1970-1971	7,497,534.14	2,576,575.07	17,807,253.85	35,801.07	16,360,983.40	44,278,147.53

Source:

Annual Reports of the Prince William County Board of Supervisors.

Table 9

School Board Disbursement of Funds
Prince William County, 1960-1971

Year	Administration ($)	Instruction regular day school ($)	Other instructional costs ($)
1960-1961	48,555.23	1,878,769.46	90,141.03
1961-1962	57,109.44	2,255,076.34	102,437.93
1962-1963	55,181.40	4,347,862.24	336,665.45
1963-1964	63,540.85	3,393,290.50	223,358.18
1964-1965	90,767.62	4,359,237.25	272,320.11
1965-1966	118,181.61	5,318,849.21	297,848.17
1966-1967	149,240.94	6,733,321.00	523,640.67
1967-1968	202,272.25	8,227,931.71	673,796.64
1968-1969	219,570.79	9,936,990.87	846,252.82
1969-1970	354,367.19	12,529,020.80	1,055,214.58
1970-1971	454,992.66	16,478,012.31	1,724,068.25

	Operation of school plant ($)	Maintenance of school plant ($)	Fixed charges ($)	Total cost of operation ($)
1960-1961	222,472.98	85,869.01	26,029.57	2,566,130.11
1961-1962	276,027.40	92,988.99	28,925.05	3,074,984.51

Table 9 (continued)

	Operation of school plant ($)	Maintenance of school plant ($)	Fixed charges ($)	Total cost of operation ($)
1962-1963	494,811.17	283,009.90	52,822.21	6,043,301.82
1963-1964	433,431.57	126,896.48	41,207.73	4,635,149.29
1964-1965	580,364.31	160,953.74	33,481.12	5,890,410.19
1965-1966	654,856.66	194,065.99	59,614.85	7,031,237.16
1966-1967	809,548.13	231,873.90	65,090.74	8,980,591.44
1967-1968	980,166.89	367,326.98	94,298.31	11,145,170.16
1968-1969	1,268,598.53	470,222.73	186,270.10	13,596,134.24
1969-1970	1,488,601.05	769,961.74	293,281.15	17,312,341.05
1970-1971	1,889,495.22	1,245,001.76	408,252.61	23,359,837.07

	Capital outlay ($)	Debt service ($)	Total disbursements ($)
1960-1961	86,044.04	202,124.05	2,854,298.20
1961-1962	80,472.90	265,310.45	3,420,767.86
1962-1963	2,286,598.36	850,951.35	9,180,851.53
1963-1964	5,835,761.58	591,039.09	11,061,949.96
1964-1965	2,937,678.58	1,976,557.87	10,804,646.64
1965-1966	2,391,935.53	4,168,316.02	13,591,488.71
1966-1967	4,113,434.72	1,433,342.03	14,527,368.19
1967-1968	4,377,450.33	6,627,933.90	22,349,024.39

Table 9 (continued)

	Capital outlay ($)	Debt service ($)	Total disbursements ($)
1968-1969	4,338,531.79	1,780,816.52	20,160,498.36
1969-1970	5,236,083.15	2,077,984.35	25,107,306.65
1970-1971	6,261,180.06	2,244,638.27	32,580,399.97

Source:

Annual Reports of the Division Superintendent for Prince William County; Annual Reports of the Superintendent of Public Instruction for the State of Virginia.

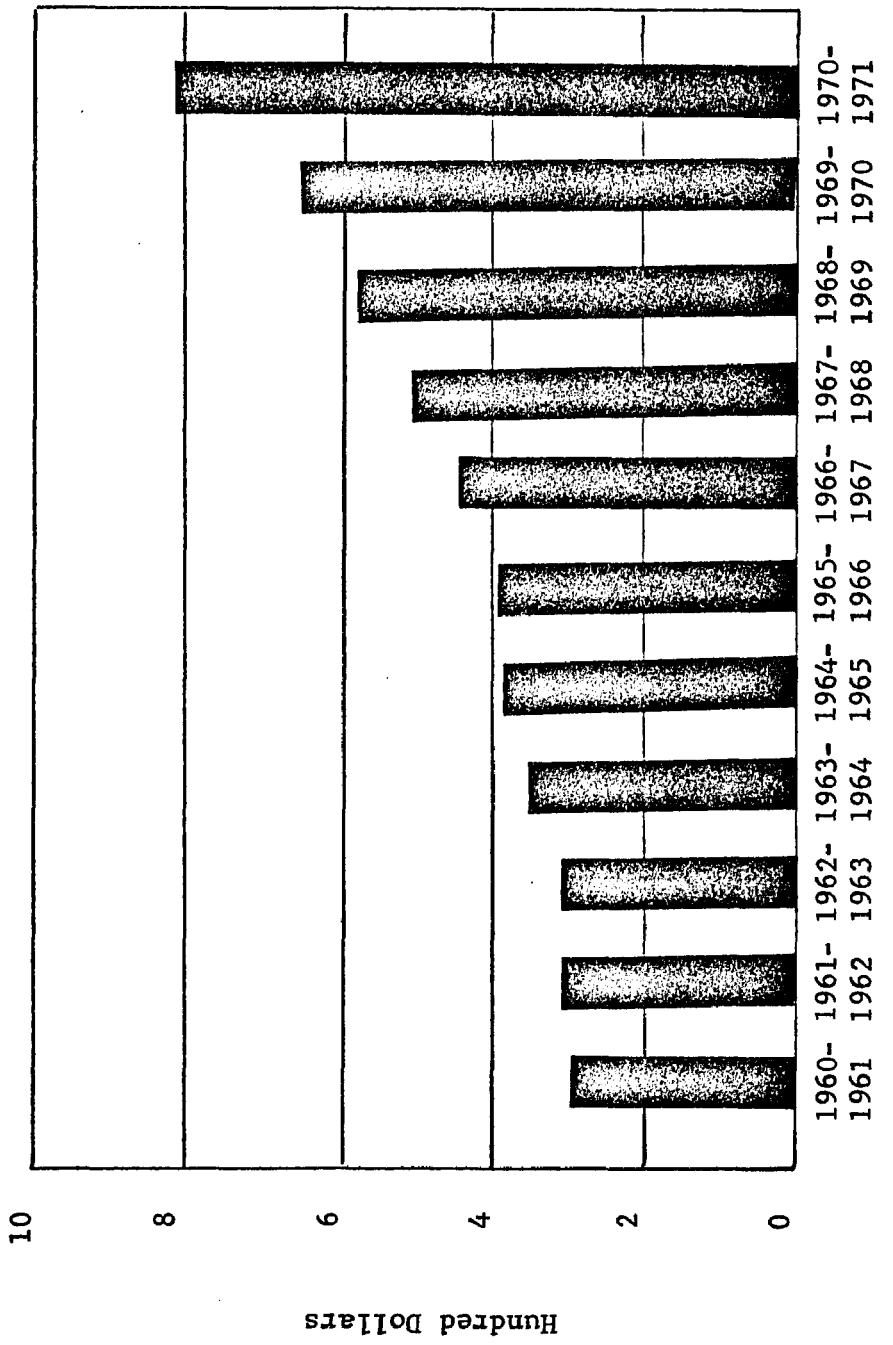

Figure 8

Per Pupil Cost of Operation for Prince William County, 1960-1971

pupil costs, the per pupil cost of operation increased from $283. in 1960 to $810. in 1971, an increase of 286.6 percent.

During the period of time from 1960 to 1971, Prince William County spent $37,945,166. for capital outlay (buildings, furniture, equipment, and vehicles) and $33,219,010. for debt service. Data related to the value of school property in Prince William County for 1960 to 1971 is embodied in Table 10. During that period, the value of school buildings and sites increased in value from $6,685,141. to $33,652,349. or 603.2 percent. The value of furniture and equipment increased from $548,470. in 1960 to $5,875,635. in 1971 for an increase of 1074.5 percent; and the value of school buses increased by $685,041. or 449.3 percent.

The outstanding debt for school capital outlay projects at the beginning of 1971 was $18,844,259. Data incorporated in Table 11 shows that annual debt payments, including principal and interest, related to the school capital debt would be $24,428,452.09 for the period 1971 through 1993. An additional $28,700,000. in school general obligation bonds had been approved but had not been sold.

Data in Figure 9 reveal that the number of classroom teachers increased from 368 in 1960 to 1,463 in 1971 for a 397.2 percent increase. Table 12 contains the number of school administrators and instructional supervisors employed for each year from 1960 to 1971. Elementary school administrative positions increased from thirteen to thirty-three; secondary school administrative positions increased from four to fifteen, and combined elementary and secondary school

Table 10

Value of School Property in Prince William County, 1960-1971

Year	Value of site and buildings ($)	Value of furniture and equipment ($)	Value of school buses ($)	Total value of property ($)
1960-1961	6,685,141.	548,470.	196,209.	7,429,820.
1961-1962	7,616,540.	593,313.	230,323.	8,441,176.
1962-1963	8,276,081.	672,167.	281,364.	9,229,612.
1963-1964	13,375,643.	1,111,401.	384,298.	14,871,342.
1964-1965	24,626,635.	1,759,367.	319,075.	26,705,077.
1965-1966	26,000,000.	2,019,346.	354,290.	28,372,636.
1966-1967	29,286,000.	2,179,924.	291,799.	31,657,723.
1967-1968	30,514,281.	2,743,026.	351,214.	33,608,521.
1968-1969	33,216,246.	3,717,663.	478,461.	37,402,370.
1969-1970	36,424,598.	4,814,619.	700,879.	41,928,096.
1970-1971	40,337,490.	5,895,635.	881,250.	47,094,375.

Source:

Annual Reports of the Division Superintendent for Prince William County; Annual Reports of the Superintendent of Public Instruction for the State of Virginia.

Table 11

Annual Debt Requirements for County General Obligation School Bonds and Literary Fund Loans, as Computed June 30, 1970

Fiscal year	Principal ($)	Interest ($)	Total: interest and principal ($)
1971	1,186,363.00	721,193.47	1,907,556.47
1972	1,261,363.00	675,967.33	1,937,330.33
1973	1,271,363.00	625,303.69	1,896,666.69
1974	1,396,363.00	574,452.55	1,970,815.55
1975	1,396,363.00	523,851.41	1,920,214.41
1976	1,396,363.00	472,804.57	1,869,167.57
1977	1,336,363.00	410,008.33	1,746,371.33
1978	1,337,343.00	375,972.99	1,713,315.99
1979	1,306,763.00	315,145.85	1,621,908.85
1980	1,204,063.00	266,743.11	1,470,806.11
1981	1,204,063.00	220,637.97	1,424,700.97
1982	1,204,063.00	176,807.83	1,380,870.83
1983	1,227,388.00	122,402.69	1,349,790.69
1984	1,227,388.00	69,381.05	1,296,769.05
1985	727,388.00	16,359.41	743,747.41
1986	27,388.00	4,837.77	32,225.77
1987	27,388.00	4,016.13	31,404.13

Table 11 (continued)

Fiscal year	Principal ($)	Interest ($)	Total: interest and principal ($)
1988	27,388.00	3,194.49	30,582.49
1989	27,388.00	2,372.85	29,760.85
1990	27,388.00	1,551.21	28,939.21
1991	12,998.00	729.57	13,727.57
1992	7,348.00	339.63	7,687.63
1993	3,973.00	119.19	4,092.19
Total	18,844,259.00	5,584,193.09	24,428,452.09

Source:

1971 Annual Report of Prince William County Board of Supervisors.

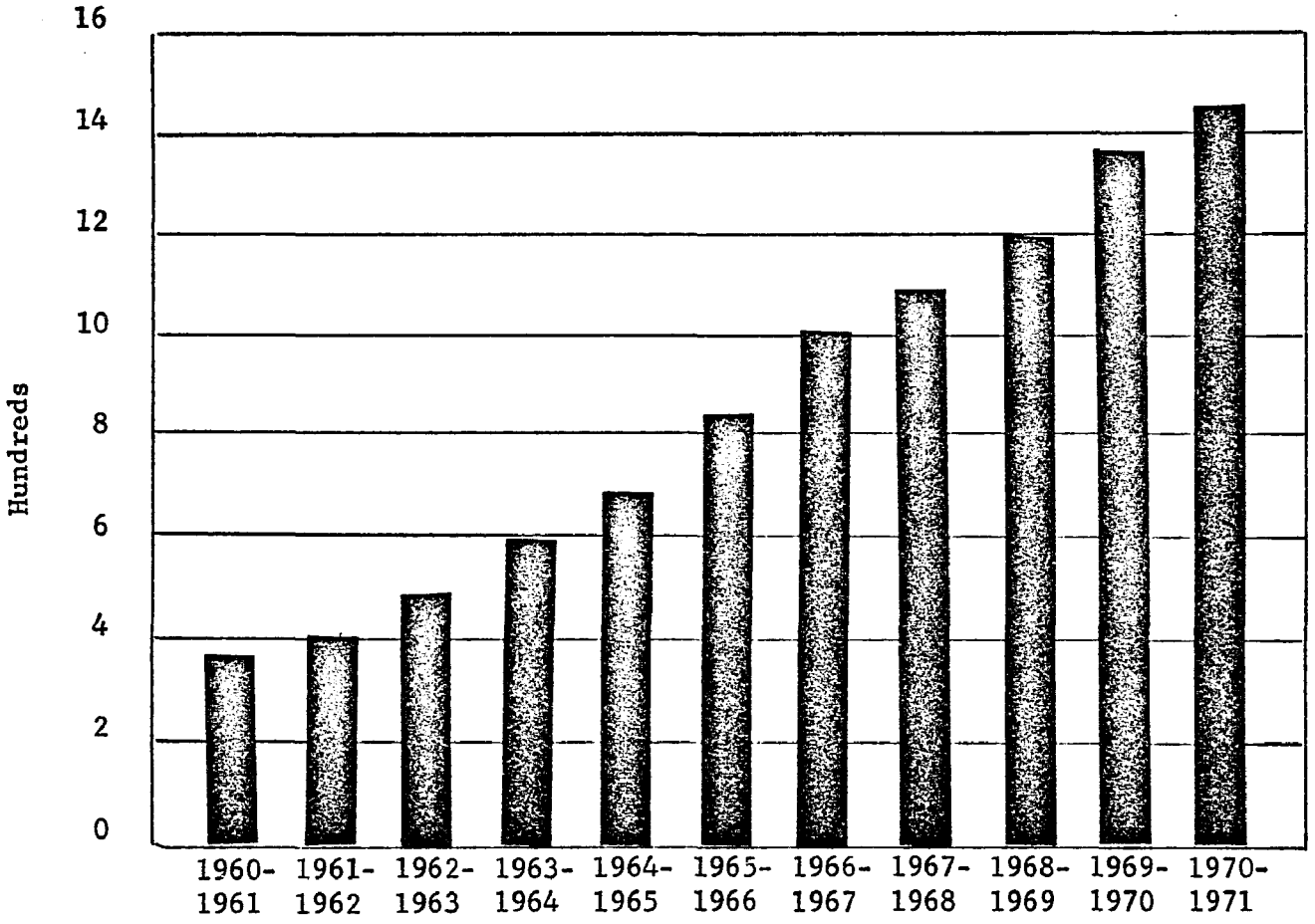

Figure 9

Number of Classroom Teacher Positions in Prince William County Public Schools, 1960-1971

Table 12

Number of School Administrators and Instructional Supervisors in Prince William County Public School, 1960-1971

Year	Elementary administrators	Secondary administrators	Combined administrators	Instructional supervisors
1960-1961	13	4	2	5
1961-1962	15	4	2	5
1962-1963	15	7	2	8
1963-1964	16	8	6	6
1964-1965	20	13	7	11
1965-1966	20	13	7	13
1966-1967	18	15	9	18
1967-1968	21	12	17	20
1968-1969	25	12	17	21
1969-1970	24	13	18	23
1970-1971	33	15	23	25

Source:

Annual Reports of the Division Superintendent for Prince William County; Annual Reports of the Superintendent of Public Instruction for the State of Virginia.

administrative positions increased from two to twenty-three from 1960 through 1971. During the same period, the number of instructional supervisors increased from five to twenty-five.

The number of central administrators and service personnel for each year from 1960 through 1971 is reported in Table 13. The number of central administrators, excluding the Division Superintendent, increased from two in 1960 to nine in 1971. During the eleven-year span, the number of health service personnel increased from one to eleven; pupil transportation positions from seventy-one to 188, and plant operation and maintenance positions from thirty-eight to 252. Compulsory attendance personnel positions decreased from three in 1960 to two and one-half in 1971.

Implementation Intents

The 45-15 plan in the Neabsco, Dale City, Bel Air, and Godwin schools was implemented as a pilot program. It was anticipated that the pilot program would be evaluated to determine its effects on cost, student achievement and community attitudes toward the 45-15 year-round program. The evaluation was to provide data which was to be used as the basis for making the decision to continue and possibly extend the 45-15 plan to other schools or to terminate the plan.

Facilities. The combination of growth in school enrollment, the defeat of a school bond referendum in 1968 to provide 13,800 pupil stations, and a delay in selling bonds approved in 1970 due to fluctuations of the bond market resulted in overcrowded school

Table 13

Number of Central Administrative and Service Personnel Positions in Prince William County, 1960-1971

Year	Administrators[a]	Health service	Compulsory attendance	Pupil transportation	Plant operation and maintenance
1960-1961	2	1	0	71	38
1961-1962	2	1	3	76	59
1962-1963	2	1	2	74	62
1963-1964	2	1	2	97	87
1964-1965	3	1	2	102	112
1965-1966	3	1	2	117	118
1966-1967	3	1	2	122	131
1967-1968	3.5	10	1	137	157
1968-1969	5	4	1.5	150	178
1969-1970	6	11	1.5	163	203
1970-1971	9	11	2.5	188	252

[a]Not including the Division Superintendent

Source:

Annual Reports of the Division Superintendent for Prince William County; Annual Reports of the Superintendent of Public Instruction for the State of Virginia.

facilities in Prince William County. Portable units were used and several schools were placed on double shifts to house the excessive pupil population in the 1970-1971 school year. The School Board and its administrative staff expressed their belief that double shifts were detrimental to the educational program and did not enjoy community acceptance. The School Board maintained that unless a more educationally tenable alternative could be found more schools would have to be placed on double shifts. In September of 1970, the Prince William County School Board appointed an ad hoc committee composed of teachers, administrators, and service personnel to study means of relieving the overcrowded facilities. The investigation of the committee led to the recommended 45-15 year-round plan as holding the most promise for increasing school plant capacities while maintaining the quality of the educational program.

Believing the plan could alleviate some overcrowding of schools while maintaining the quality of the educational program more adequately than double shifts, led the Board to implement the plan in the Neabsco, Dale City, Bel Air, and Godwin schools. The School Board and administrative staff assumed that the 45-15 plan would not eliminate the need for the school construction program. It did visualize, however, the plan as a means of increasing the capacity of school facilities, avoiding double shifts, and reducing overcrowding. There were three intents related to the use of school facilities: (1) increase the rated capacity of the Neabsco, Dale City, Bel Air, and Godwin schools by 33-1/3 percent; (2) alleviate overcrowding

in the Neabsco, Dale City, Bel Air, and Godwin schools for the 1971-1972 school year; and (3) avoid double shifts in the Neabsco, Dale City, Bel Air, and Godwin schools for the 1971-1972 school year.

Resources. The Prince William County School Board was made aware that investigators offered no conclusive evidence of savings in operational costs under the 45-15 plan. The Board anticipated, therefore, no savings in expenditures. The intent was to freeze the allocation of teachers, materials, equipment, and monies at the same pupil-resource ratio levels that existed in the traditional nine-month schools.

Educational program. The Prince William County School Board and its staff did not claim that the 45-15 plan for the year-round operation of schools had any inherent potential for either beneficial or deleterious effects on the learning process or the educational program. It was believed by the Board that the plan would permit the quality of the educational program to continue at least at the level existing under the traditional nine-month calendar.

The School Board felt that the implementation of the 45-15 plan should provide the occasion and impetus to design new courses of study and develop materials that would provide short-term, self-contained units which would permit greater variety and a shorter achievement period. A redesigned curriculum was intended to be implemented concurrently with the 45-15 plan. Finally, it was the intent of the Board to provide opportunities for remedial work,

enrichment, and acceleration programs during the vacation phases of the plan.

Program Modifications

At the request of the School Board, the Board of Supervisors of Prince William County authorized funds to support a pilot study of the 45-15 plan. On March 3, 1971, the School Board directed the school administrative staff to implement the 45-15 plan in four schools.

In May of 1970, the School Board was granted $5,076.25 by the State Department of Education to partially fund an evaluation of the 45-15 pilot program. The grant request stated that the funds were to be used to study the effect of the 45-15 plan for year-round operation of schools and the thematic curriculum on the achievement, attendance, and the personal and social adjustment of students in the pilot program. (See Appendix A.)

The request for funding set forth the specific research design to be executed by the Office of Research and Development for Prince William County Schools. The study was designed to determine whether there was a statistically significant difference in certain areas of student achievement, personal adjustment, social adjustment, and attendance. The subjects were to be: (1) students in schools operating under the 45-15 plan and using the thematic curriculum, (2) students in traditional nine-month schools using the conventional curriculum, and (3) students in the traditional nine-month school

using the thematic curriculum. The proposed study was designed to span a three-year period with data analyzed at the end of each of three school years.

After the study had been funded and the pilot program had begun, the school officials sought to supplement their in-house evaluation in order to increase the possibility of community acceptance of the research findings. The School Board decided on October 19, 1971, to contract with outside research agencies for the evaluation component of the 45-15 year-round pilot program. While the State funded self-study was to continue, it was to be limited to the evaluation of achievement and attendance. The evaluation to be conducted by outside researchers was designed to investigate cost factors, achievement outcomes, and community attitude toward the 45-15 plan.

A contract was negotiated with the Bureau of Educational Research of the University of Virginia to evaluate the effects of the 45-15 plan and the thematic curriculum on changes in student achievement and the attitudes of students and staff in the Dale City Community. (See Appendix B.) The Bureau was contracted to identify and describe what happened in the classrooms of the pilot schools in terms of: (1) learning climate, (2) instructional methods, (3) student behavior, and (4) materials used by students.

Ned S. Hubbell and Associates, Incorporated contracted with the Prince William County School Board to conduct an attitudinal study designed to determine the attitudes of students, parents, and school

faculties toward the 45-15 cycled-attendance plan. (See Appendix C.) Educational Turnkey Systems contracted to perform a comprehensive cost analysis of the 45-15 pilot program. (See Appendix D.) The Dean of the School of Education of the College of William and Mary was designated to monitor and coordinate the activities of the three evaluating agencies. The monitoring agent and the Division of Research and Development of the State Department of Education were to validate and authenticate the procedures, practices, and findings of each of the evaluating agencies.

Facilities. Routine maintenance, usually accomplished during the summer shutdown was scheduled to ensure compatability with the year-round attendance calendar. All members of the custodial staffs of the pilot program schools had their period of employment extended to twelve months.

The change in School Board policy that permitted year-round operation and the implementation of the 45-15 cycled-attendance plan increased the rated capacities of the pilot program school plants. While it is assumed that the 45-15 plan increased the rated capacity of each of the four pilot schools by 33-1/3 percent, the Board assigned an arbitrary operational capacity increase of 25.5 percent. Table 14 incorporates data that show the 45-15 operational capacity figures assigned by the Board were 25.5 percent greater than the nine-month rated capacities. The figures indicate that the total assigned increase in operational capacity was 743 pupil stations for

Table 14

A Comparison of Capacity Figures for the Neabsco, Dale City, Bel Air, and Godwin Schools Under the Traditional 9-Month Calendar and the 45-15 Cycled-Attendance Calendar

School	9-month rated capacity	Operational 45-15 capacity	Net increase	Percent of increase
Neabsco	900	1,125	225	25.0
Bel Air	615	769	154	25.3
Dale City	615	769	154	25.3
Godwin	840[a]	1,050	210	25.0
Total	2,970	3,713	743	25.5

[a]Godwin not rated for capacity under 9-month calendar. Figures based on assumption of 25 percent increase under 45-15 plan.

Source:

Prince William County School Board, Office of Research and Development.

the four 45-15 schools. In assigning the operational capacity figure, the Board indicated that it should like to limit enrollment to what was felt could be adequately housed in the facilities under the year-round calendar. No evidence was found of attempts to limit the enrollments to the arbitrarily established operational capacities.

Resources. All modifications relevant to resources (staff, funds, materials, equipment, and buses) were limited to changes in time schedules, length and patterns of use. The single most important modification related to resources was the change in the operational calendar. The traditional nine-month calendar scheduled the operation of schools for 184 days from August 30, 1971, to June 8, 1972. (See Appendix E.) The 45-15 calendar scheduled the operation of the pilot program schools for 241 days from June 29, 1971, to June 22, 1972. (See Appendix F.) When the nine-month operational calendar was modified to permit the year-round operation, it was necessary for the Board to revise the schedules to secure, distribute, and use staff, funds, materials, equipment, and services. There was no modification in the per pupil quantity of the resources or the use of the resources. While the teacher-pupil ratios for the pilot program schools were to be maintained at the level of the traditional nine-month schools, there were changes in the teacher time schedules and length of employment and the pattern of use.

The School Board permitted some teachers to choose between a 193-day contract and a 241-day contract. Teachers who were employed

on the 193-day contracts were assigned to a class in one of the four cycled groups. The teachers taught on the same forty-five day schedule and vacationed on the same fifteen day schedule as the class to which they were assigned.

Teachers who were employed on the 241-day contract were each considered to be one and one-third teacher. Three 241-day teachers were grouped and four student groups were assigned to the three teacher team. Of the four assigned student groups, one of the groups was in the vacation phase of their cycle at all times.

Because the 193-day contract teachers were provided with twelve work days during the contractual year, the Board made a similar provision for the 241-day teachers. School administrators had the option to provide substitute teachers for approximately sixteen days for each 241-day teacher or provide an aide to permit released time for nonteaching work days. Such options were dependent upon the number of 241-day teachers in each school.

Educational program. The Year-Round Curriculum Committee was appointed to revise the curriculum so that it would be compatible with the 45-15 cycled-attendance calendar. This committee proposed that the existing subject area, varied length unit curriculum be changed to one that emphasized self-contained interdisciplinary themes capable of being completed with a fifteen day segment of the attendance cycles. The proposals were embodied in a curriculum guide which consisted of three components: (1) Thematic Component,

(2) Language Arts Component, and (3) Mathematics Component.

In the thematic component of the curriculum guide, most of the themes involved the correlation of two or more subject areas. (See Appendix G.) While the committee incorporated a minimum of two behaviorally stated objectives for each theme, the belief was expressed that the thematic curriculum lends itself to objectives which could not be expressed in behavioral terms.

The Language Arts and Mathematics Components of the curriculum guide were divided into sixty phases for grades 1 through 5 or twelve phases for each grade. The phases were designed to provide programs of systematic skill development. For each Mathematics phase the committee presented lists of skills to be introduced and/or mastered. (See Appendix H.) The Language Arts phases were designed to introduce reading, language and spelling skills in a systematic manner isolated from the subject content areas. (See Appendix I.)

The Godwin Middle School was the only Prince William County middle school plant designed on the open space concept influencing the staff of that school to revise and update its instructional program. When it was decided in March of 1971 to include the Godwin Middle School in the 45-15 pilot program, the Prince William County School Board employed four full-time teachers and two permanent substitutes for the purpose of releasing six Godwin teachers per day. The released teachers were directed to revise the curriculum for grades 6 through 8 so that it would be compatible with the 45-15 calendar.

The sixth grade curriculum at Godwin was changed from the

existing subject area, varied length unit curriculum to one that emphasized the correlation of language arts, social studies, literature, and science around broad related themes. (See Appendix J.) The sixth grade mathematics and reading components were designed to provide systematic skill development.

For grades 7 and 8, the Godwin staff designed the language arts and social studies unified curriculum to be presented in four nine-week segments emphasizing broad interdisciplinary themes. Single subject area themes were developed for mathematics, science, art, physical education, industrial arts, and foreign languages.

Implementation Outcomes

The intent of the Prince William County School Board to construct a research design to evaluate the 45-15 pilot program had been accomplished on December 14, 1971. The Board and its administrative staff had designed the in-house evaluation scheme that would produce data over a three-year period. (See Appendix A.) It contracted, also, with the aforementioned external research agencies to evaluate the effects of the 45-15 year-round pilot program on attendance, achievement, cost, and attitudes.

By February of 1972, the investigations had produced no data necessary for the Board to make the decision to continue, extend, or terminate the pilot program. The Board decision was based, therefore, only on expressions of support for the 45-15 plan. Without the desired data, the Board voted to continue the 45-15 pilot project in

the Neabsco, Dale City, Bel Air, and Godwin schools and to extend the plan to the Minnieville and Gar-Field schools for the 1972-1973 school year.

Facilities. It is assumed that the rated capacities of the pilot schools were increased by 33-1/3 percent when decisions were made to: (1) operate the facilities for 240 days rather than 180 days, (2) restrict the annual attendance of each pupil to 180 days, (3) divide the pupil population into four relatively equal groups, and (4) mandate the attendance of three groups and the vacation of one group at all times during the operational year.

Table 15 reveals that in March of 1972 there was a disproportionate assignment of students to some of the attendance groups for each of the pilot schools. In the Bel Air Elementary School, the attendance groups ranged from 17.9 percent to 31.7 percent of the total pupil population. The Dale City Elementary School groups ranged from 19.6 percent to 30.1 percent; and the Neabsco Elementary School attendance group size ranged from 22.3 percent to 30.3 percent. The range for the Godwin Middle School attendance groups was 21.9 percent to 29.6 percent.

While there were no double shifts in operation in the four pilot schools in March of 1972, the facilities were overcrowded. Table 16 incorporates data which show that if the pilot schools had been operating on the traditional nine-month calendar with the same pupil populations, the Neabsco membership for March would have

Table 15

Relative Size of the Four Attendance Groups for Each of the 45-15 Pilot Program Schools in March of 1972

School	Group	Membership	Percentage of membership
Neabsco	Blue	317	22.3
	Red	332	24.1
	Orange	348	24.7
	Green	420	30.3
Bel Air	Blue	243	31.7
	Red	222	28.8
	Orange	138	17.9
	Green	166	21.5
Dale City	Blue	219	27.1
	Red	243	30.1
	Orange	160	19.9
	Green	185	21.6
Godwin	Blue	295	21.9
	Red	398	29.6
	Orange	297	22.1
	Green	351	26.1

Source:

Prince William County School Board, Office of Research and Development.

Table 16

A Comparison of Membership with 9-Month and Year-Round Rated Capacity Figures for Each 45-15 Pilot Program School in March of 1972

School	Membership March, 1972	9-month rated capacity	Percentage of membership in excess of 9-month capacity	Year-round cycled-attendance rated capacity	Percentage of membership in excess of year-round capacity
Neabsco	1,417	900	57.4	1,200	18.0
Bel Air	769	615	25.3	818	- 5.8
Dale City	807	615	31.1	818	- 1.2
Godwin	1,341	840	59.5	1,120	19.8

Source:

Prince William County School Board, Office of Research and Development.

exceeded the rated capacity by 57.4 percent; Dale City Elementary School by 31.1 percent; Bel Air by 25.3 percent; and Godwin by 59.5 percent. When the year-round cycled-attendance rated capacities were considered, the Neabsco membership exceeded capacity by only 18.0 percent and Godwin School by 19.8 percent. Dale City School membership was 1.2 percent below the year-round rated capacity and the Bel Air School membership was 5.8 percent below capacity.

Seven trailers were in use at the Neabsco School in March of 1972. The units lowered classroom overcrowding, but added nothing to support facilities. Since rated capacity is the student body size for which all support facilities, pupil stations and acreage are intended, trailers were not considered to be part of the Neabsco School rated capacity.

Although the year-round rated capacity for a school using the cycled-attendance method was increased by 33-1/3 percent of the nine-month capacity, the actual in-school rated capacity was unchanged. To illustrate: if the nine-month capacity was 900 pupils, the year-round cycled-attendance capacity would be an increase of one-third or 300 additional pupil stations for a total year-round capacity of 1,200. However, the in-school rated capacity for any combination of three of the four cycled groups would still be 900.

Table 17 embodies data which point out that when the in-school capacity was compared to the membership totals of the various combinations of in-school attendance groups each pilot school was overcrowded. One of the in-school groups at the Bel Air School

Table 17

A Comparison of Membership and In-School Capacities for the Various Combinations of In-School Attendance Groups for March of 1972

School	In-school capacity	Group I	Percentage in excess of in-school capacity	Group II	Percentage in excess of in-school capacity	Group III	Percentage in excess of in-school capacity	Group IV	Percentage in excess of in-school capacity
Neabsco	900								
Red		332		332		332		. .	
Blue		317		317		. .		317	
Green		420		. .		420		420	
Orange		. .		348		348		348	
Total		1,069	18.79	997	10.7	990	10.0	1,075	19.4
Bel Air	615								
Red		222		. .		222		222	
Blue		243		243		. .		243	
Green		166		166		166		. .	
Orange		. .		138		138		138	

Table 17 (continued)

School	In-school capacity	Group I	Percentage in excess of in-school capacity	Group II	Percentage in excess of in-school capacity	Group III	Percentage in excess of in-school capacity	Group IV	Percentage in excess of in-school capacity
Total		631	2.4	. .	-11.4	536	-17.4	603	- 1.6
Dale City	615								
Red		243		243		243		. .	
Blue		219		219		. .		219	
Green		185		. .		185		185	
Orange		. .		160		160		160	
Total		647	5.1	722	17.2	588	- 4.2	564	- 8.2
Godwin	840								
Red		398		398		398		. .	
Blue		295		295		. .		295	
Green		351		. .		351		351	
Orange		. .		297		297		297	

Table 17 (continued)

School	In-school capacity	Group I	Percentage in excess of in-school capacity	Group II	Percentage in excess of in-school capacity	Group III	Percentage in excess of in-school capacity	Group IV	Percentage in excess of in-school capacity
Total		1,044	24.2	990	17.7	1,046	24.4	943	12.2

Source:

Prince William County School Board, Office of Research and Development.

exceeded the in-school capacity by 2.4 percent while the other three in-school groups were below the capacity by 11.4 percent, 17.4 percent, and 1.6 percent. Two of the Dale City school in-school groups exceeded the in-school capacity by 5.1 percent and 17.2 percent and two were below the capacity by 4.2 percent and 8.2 percent. All four groups at Neabsco Elementary School exceeded the in-school capacity--one by 18.7 percent, one by 10.7 percent, one by 10.0 percent and one by 19.4 percent. The Godwin school in-school groups exceeded the in-school capacity figure by 24.2 percent, 17.7 percent, 24.4 percent, and 12.2 percent.

Since no attempt was made by the Board to limit pilot school enrollments to the arbitrarily assigned operational capacities, these capacities were without meaning. To compare them to membership in March would only indicate a greater overcrowding of the pilot school facilities at that time.

Resources. At the beginning of the 1971-1972 fiscal year, the same per pupil ratios were used for allocations to the nine-month schools and the 45-15 pilot program schools. Funds for materials and supplies for subject areas were allocated using formulas based on projected membership. (See Appendix K.) Such allocations were made at the beginning of the fiscal year and in March of 1972, there was no evidence that the initial allocations were supplemented for any of the schools.

Equipment was allocated to the pilot program schools at the

time the plants were constructed. The original equipment was purchased with 15 percent of the construction costs of the Neabsco, Dale City, and Bel Air elementary schools and 20 percent of the cost of construction of the Godwin Middle School. There was no evidence in March of 1972 of a supplementary allocation of equipment to the pilot schools other than pupil desks made necessary by pupil populations in excess of existing desks.

In March of 1972, the ratio of pupils to teachers, administrators, clerical and custodial workers for the 45-15 pilot schools existed at the level of ratios for the nine-month schools. Table 18 contains data which show that the teacher-pupil ratios for the pilot schools were within the same range of ratios (1:23.0 to 1:32.0) as the nine-month schools. While the teacher-pupil ratio for the Neabsco and Bel Air schools were greater than the mean district wide teacher-pupil ratio of 1:26.1, Dale City School and Godwin Middle School teacher-pupil ratios were below the mean.

The data indicate that while the administrator-pupil ratios for the pilot schools were at the level of the nine-month schools the Neabsco ratio was the upper limit of the 1:268 to 1:708 range. The administrator-pupil ratios were comparable to those of nine-month schools.

In addition to the reported staff-ratios which were based on official membership figures, pilot school administrators report that there was a number of students who were permitted to attend each of the pilot program schools during their fifteen-day vacation periods.

Table 18

Pupil-Staff Ratios for 9-Month and Pilot Program Schools in March of 1972

School	Teacher-pupil ratio	Administrator-pupil ratio	Clerical-pupil ratio	Custodial-pupil ratio
Baldwin	1:25.3	1:507	1:253	1:253
Bel Air[a]	1:27.4	1:384	1:192	1:192
Belmont	1:27.1	1:515	1:257	1:171
Bennet	1:28.1	1:407	1:244	1:203
Coles	1:26.8	1:510	1:255	1:127
Dale City[a]	1:25.2	1:404	1:202	1:202
Dumfries	1:27.5	1:550	1:275	1:275
Featherstone	1:26.6	1:590	1:295	1:196
Gainesville	1:26.3	1:451	1:150	1:150
Godwin[a]	1:25.3	. .	. .	. .
R. Dean Kilby	1:26.4	1:502	1:251	1:167
Loch Lomond	1:27.0	1:568	1:284	1:284
Manassas Park	1:24.0	1:264	1:264	1:176
Marusco Hills	1:26.1	1:341	1:227	1:227
Neabsco[a]	1:28.7	1:709	1:283	1:236
Nokesville	1:28.2	1:480	1:240	1:160
Occoquan	1:26.3	1:391	1:260	1:195
Potomac View	1:24.0	1:313	1:207	1:207

Table 18 (continued)

School	Teacher-pupil ratio	Administrator-pupil ratio	Clerical-pupil ratio	Custodial-pupil ratio
Sinclair	1:32.0	1:449	1:299	1:299
Triangle	1:24.1	1:422	1:211	1:140
Tyler	1:22.1	1:520	1:260	1:130
Vaughan	1:27.0	1:629	1:315	1:157
Washington-Reid	1:23.0	1:213	1:107	1:107
West Gate	1:26.0	1:379	1:253	1:253
Yorkshire	1:23.0	1:268	1:178	1:178
Mean	1:26.1	1:430	1:219	1:181
Range	1:23.0 to 1:32.0	1:268 to 1:709	1:107 to 1:315	1:107 to 1:299

[a]45-15 Pilot Program Schools

Source:

Prince William County School Board, Office of Research and Development.

It was estimated that between ten- and thirty-students were permitted to attend for one- or two hours per day during their vacation phases for the purposes of remedial or make-up work. Because no record was kept of the number of students attending under these circumstances, the exact size of the pupil-staff ratio could not be determined.

Educational program. The revised course of study for the pilot schools were implemented simultaneously with the 45-15 pilot program on June 29, 1971. (See Appendices G, H, I, K.) While the principals of the pilot schools reported opportunities for some students to return for remedial and make-up work during their fifteen-day vacation periods, no evidence was found of planned remediation programs. For the Godwin Middle School pupils, the 45-15 plan precluded remedial and enrichment programs offered by the other Prince William County middle schools during the summer months.

Chapter 4

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents: (1) the conclusions reached from the analysis of data, and (2) the recommendations for other investigations.

Conclusions

In terms of what the Prince William County School Board intended to accomplish by the implementation of the 45-15 pilot program, the following conclusions were reached from the analysis of the data. These conclusions are presented in the form of intents, outcomes, and evidences of outcomes that influenced the outcome.

1. Intent. The School Board intended to construct a research design to evaluate the 45-15 year-round pilot program.

Outcome. An in-house evaluation was designed to determine the effects of the 45-15 plan on pupil achievement and attendance. (See Appendix A.) An Evaluation Task Force consisting of external research agencies designed research schemes to evaluate the 45-15 plan on the effects of cost, achievement, and attitudes. (See Appendices B, C, D.)

Evidences of Relationships that Influenced the Outcome. It is assumed that the School Board intent to construct a research design influenced the construction of the in-house and external research agency designs for the evaluation of the program.

2. Intent. The School Board intended to use the data

generated by the research design as the basis for the decision to continue and possibly extend the 45-15 plan to other schools or to terminate the pilot program.

Outcome. The research design did not generate the desired data for the February, 1972, Board meeting. On February 9, 1972, the Prince William County School Board voted to continue the 45-15 plan in the Neabsco, Dale City, Bel Air, and Godwin schools and to extend the plan to two additional schools in the Dale City area. The decision was made on the basis of expressions of support for the plan presented at a public hearing and in the absence of the supportive data.

Evidences of Relationships that Influenced the Outcome. It is assumed that the research design itself precluded congruence between the intent to use the data and the outcome. The in-house evaluation was designed to administer the achievement posttest at the close of each of three school years. The contracts with members of the Evaluation Task Force were not completed until December 14, 1971. While none of the contracts specified a completion date, the Bureau of Educational Research proposed to administer the posttest for achievement in June of 1972.

Neither the in-house or external evaluations were designed to generate data by February of 1972. There is, therefore, empirical evidence that there was a relationship between the design of the research and the lack of congruence between intent and outcome.

3. Intent. The School Board intended to increase the

rated capacity of the Neabsco, Dale City, Bel Air, and Godwin schools by 33-1/3 percent.

Outcome. The rated capacities of the pilot schools were increased by 33-1/3 percent when the 45-15 cycled-attendance plan was implemented on June 29, 1971. The Board had not, however, taken advantage of the increased capacities of the facilities. In March of 1972, there was a disproportionate assignment of students to some of the attendance groups for each of the pilot schools. To have benefited from the increased capacity, each of the four attendance groups would have included approximately 25 percent of the total population for each school. In fact, the attendance groups for the Bel Air School ranged from 17.9 percent to 31.7 percent; Dale City from 19.6 percent to 30.1 percent; Neabsco School from 22.3 percent to 30.3 percent; and Godwin School from 21.9 percent to 29.6 percent of its total pupil population.

Evidences of Relationships that Influenced the Outcome. Documentary evidence reveals that antecedent demographic, economic, and educational conditions which reflected steady increases in population and expenditures for governmental and school programs had some influence on the intent of the School Board to increase the utilization of existing school facilities.

The modification of the school calendar to increase the number of school operation days by one-third; the restriction of each pupil to 180 days of annual attendance; the division of the pupil populations into four groups; and the mandating of the attendance of

three groups and the vacation of one group at all times logically resulted in the increased rated capacity of each of the pilot program schools by 33-1/3 percent. (See Appendix F.)

The assignment of pupil populations to attendance groups for each of the schools was disproportionate and precluded the total realization of the advantages of the increased capacity. (See Table 15.)

4. Intent. The School Board intended to avoid double shifts in the Neabsco, Dale City, Bel Air, and Godwin schools for the 1971-1972 school year.

Outcome. The intent of the School Board to avoid split-shifts in the pilot program schools was congruent with the outcome. None of the pilot program schools was operating on double shifts in March of 1972.

Evidences of Relationships that Influenced the Outcome. It is assumed that the antecedent demographic and educational conditions influenced the School Board to find a means of housing the increasing pupil populations. Because the Board was not able to construct additional buildings for the 1971-1972 school year, it considered the available alternatives to be year-round operation and double shifts.

It is assumed, also, that since the Board modified its policy on the school operational calendar to avoid shifts the intent influenced the modification which resulted in the absence of shifts.

5. Intent. The School Board intended to alleviate

overcrowding in the Neabsco, Dale City, Bel Air, and Godwin schools.

Outcome. Overcrowding of pilot school facilities was alleviated. Had the pilot schools been operating on the nine-month calendar in March of 1972, the Neabsco School would have exceeded rated capacity by 57.4 percent; Bel Air by 25.3 percent; Dale City by 31.1 percent; and Godwin would have exceeded its rated capacity by 59.5 percent. Under the cycled-attendance plan, however, Neabsco exceeded its year-round capacity by only 18 percent and Godwin exceeded its year-round capacity by 19.8 percent. Dale City was 1.2 percent and Bel Air was 5.8 percent below the year-round rated capacity.

Evidences of Relationships that Influenced the Outcome. It is assumed that the calendar and assignment modifications influenced the outcome. It is assumed, also, that the disproportionate assignment of pupils to attendance groups precluded additional reductions in the overcrowding of the facilities.

6. Intent. The School Board intended to maintain the pupil-resource allocation ratios for the 45-15 pilot schools at the level of the ratios for the nine-month schools.

Outcome. In March of 1972, the ratio of pupils to teachers, administrators, clerks and custodial workers for the pilot schools existed at the level of ratios for the nine-month schools. (See Table 18.) Funds for materials and supplies had been allocated on the basis of the formulas used for the nine-month schools. (See Appendix K.)

Evidences of Relationships that Influenced the Outcome. It is assumed that the intent of the School Board was influenced by the antecedent economic and educational conditions which indicate steadily increasing educational expenditures. It is assumed, also, that the intent of the Board influenced the staff to avoid the modification of resource allocation formulas; and the absence of modifications influenced the congruence between intent and outcome.

7. Intent. The School Board intended to simultaneously implement the 45-15 pilot program and a revised curriculum for the Neabsco, Dale City, Bel Air, and Godwin schools.

Outcome. The revised curriculum and the 45-15 pilot program were implemented on June 29, 1971. (See Appendices G, H, I, J.)

Evidences of Relationships that Influenced the Outcome. It is assumed that the Board intent to revise the curriculum influenced the construction of the thematic course of study which was implemented with the 45-15 plan.

8. Intent. The School Board intended to provide opportunities for remedial work, enrichment, and acceleration.

Outcome. While pilot school principals reported opportunities for some students to return during their fifteen-day vacation periods for remedial and make-up work, no evidence was found that such opportunities were other than the informal efforts of individual teachers. The pupils at the Godwin Middle School were denied opportunities when the 45-15 calendar precluded remedial and enrichment programs offered by the other Prince William County middle

schools during the summer months.

Evidences of Relationships that Influenced the Outcome. Because there is no evidence of an organized program for remedial, enrichment or acceleration during the fifteen-day vacation periods, it is assumed that the lack of congruence was influenced by the absence of program modifications.

Recommendations for Other Investigations

It is suggested that further research studies are needed in the following areas:

1. The Prince William County 45-15 plan was implemented because it was assumed by the School Board to be an educationally superior alternative to double shifts. To support or disconfirm that assumption, a study to determine the comparative educational effects of the 45-15 plan and double shifts should be made.

2. When the Prince William County 45-15 plan was recommended as an alternative to double shifts, the Board assumed that shifts were unacceptable because of family and community disruption. The comparative family and community effects of the plans should be investigated to determine which is more acceptable.

3. In a review of literature and research related to the 45-15 plan, no evidence was found to support claims of savings or increased expenditures in operational funds. Prince William County successfully maintained pupil-resource ratios for the 45-15 plan schools at the same levels as for the nine-month plan schools. It is

assumed that resources for the 45-15 plan in Prince William County will cost no more than the nine-month plan because the Board decided not to permit them to cost more. The pilot program cannot, therefore, provide acceptable evidence of savings or increased expenditures for teachers, administrators, clerical and custodial personnel, supplies, and equipment. A cost analysis of the 45-15 plan should be made in a school district where the demand for resources is not necessarily met at the level established for the traditional nine-month operation.

4. The Prince William County School Board designed an investigation which was intended to provide data about the effects of the 45-15 plan on cost, student achievement, and community attitudes. Because of the successful control of resources and the administration of the student achievement pretest six months after the pilot program began, questions are raised about the acceptability of the research designed by the Evaluation Task Force. It is recommended, therefore, that an evaluation of the research design used in the Prince William County 45-15 Pilot Program should be undertaken.

5. The 45-15 plan in Prince William County was implemented to increase the use of educational resources. It is assumed that maximum utilization would require that a school population be equally divided into four attendance groups. The attendance groups in each of the pilot schools were not equal in size. It is recommended that a study should be undertaken to determine the effects on resource utilization of the disproportionate assignment of students to attendance groups.

Chapter 5

SUMMARY

Statement of the Problem

The purposes of this investigation were: (1) to determine whether the 45-15 cycled-attendance plan for year-round operation of schools in Prince William County, Virginia, has accomplished what it was intended to accomplish; and (2) to describe and delineate certain variables and relationships which influenced the outcome. The study was based on five constructs: (1) there was a relationship between antecedent conditions and the intents for implementation of the 45-15 plan, (2) there was a relationship between intents and program modifications, (3) there was a relationship between modifications and outcomes, (4) there was a relationship between antecedent conditions and the outcomes, and (5) there was an effort made by the Board and staff to achieve congruence between intents and outcomes.

Organization of the Study

A plan of organization for the report of the study was outlined in Chapter 1. The findings of the study were presented according to this plan. Chapter 2 was organized to present a review of the research and literature relevant to general considerations of the cycled-attendance plans and specific considerations of the staggered four-quarter plan, the 8-2 plan, and the 45-15 plan. Chapter 3 reported the results of the analysis of data. In Chapter 4

the conclusions that were reached from the analysis of data and recommendations for further study were presented. This chapter is a summary of the entire study.

Design of the Investigation

The general method of research used in this study was a modification of the descriptive and judgmental evaluation described by Stake (1966). Descriptive data were processed to delineate the logical and empirical relationships among antecedent conditions, intents, modifications, and outcomes; and to determine congruence between intents and outcomes. In the judgmental component of the evaluation, the determination of congruence was accomplished by the relative comparison of data from the Prince William County nine-month schools and the four 45-15 pilot program schools.

Data necessary to ascertain antecedent conditions were taken from documents descriptive of the variables prior to July of 1971. The data necessary to identify and describe the intents for the implementation of the 45-15 plan and program modifications were taken from documents and publications of the Prince William County School Board. The data needed to determine congruence were found in documents and publications that reported enrollment, allocations, capacities, materials, calendars, research design and findings as of March, 1972. The data were refined and supplemented by direct observation and developmental interviews.

Findings

In the decade preceding the implementation of the 45-15 year-round pilot program, the general population in Prince William County increased by 121.5 percent and the pupil population increased by 365.8 percent. While the local tax base increased from $63,531,547. in 1961 to $221,370,548. in 1970, the total expenditures for the public schools increased from $2,854,298. to $32,580,399. Overcrowded schools, an increasing pupil population, the lack of necessary facilities, and the defeat of a school bond issue referendum brought the Prince William County School Board to a consideration of the 45-15 cycled-attendance plan for the year-round operation of schools.

The 45-15 plan was implemented in four schools to serve as a pilot program and a research design was constructed but did not, as expected, generate data for decision-making. The 45-15 plan was intended to and in most cases did produce certain outcomes related to facilities, resources, and the educational program. The modification or absence of modifications of programs or variables seemed to be the critical factor in whether the intended outcomes were realized.

Conclusions

The following conclusions were reached: Six outcomes of the 45-15 pilot program were congruent with the intents for implementation.

1. A research design to evaluate the pilot program had been constructed.

2. The capacity of the pilot schools had been increased.

3. Double-shifts were not in operation in any of the pilot schools.

4. Overcrowding of the pilot schools had been alleviated.

5. Resources for the pilot schools existed at the same per pupil level as for the nine-month schools.

6. The revised curriculum and the 45-15 plan had been implemented simultaneously.

In March of 1972, two outcomes of the Prince William County 45-15 Plan were not congruent with the intents.

1. The research effort did not generate data necessary to make the decision to continue, extend, or terminate the program. In the absence of the data, the decision was made to continue and extend the program.

2. Opportunities were not provided for additional remedial work, enrichment, and acceleration.

APPENDICES

APPENDIX A

Grant Request for Funds for an In-House Study of the Effects of the 45-15 Plan

MAY 25 1971

COMMONWEALTH OF VIRGINIA
STATE BOARD OF EDUCATION
RICHMOND, VIRGINIA 23216

School Division Prince William County Date May 20, 1971

Title of Study Effect of the 45-15 Plan for Year-Round Use of Schools and a Thematic Curriculum on Elementary Students' Achievement, Attendance, Personal and Social Adjustment.

Name and title of local person responsible for supervision of this study Ken M. Young - Supervisor of Program Development, Office of Research and Development.

1. Statement of the Problem:

Prince William County will implement a year-round use of educational resources, hereafter called the 45-15 plan, in three elementary and one middle school beginning June 29, 1971. Implementation of the 45-15 plan necessitates a restructuring of the conventional nine months curriculum. The thematic approach was used in developing a curriculum for the schools using the 45-15 plan. The nature of the problem will be to determine whether or not there is any statistically significant difference in selected areas of student achievement, personal adjustment, social adjustment, and attendance when students are identified as being members of one of the following groups:

Group X - students in Dale City schools with the 45-15 plan using the thematic curriculum.

Group Y - students in other schools with the conventional nine month school year using the conventional subject curriculum.

Group Z - students in Sinclair School with the conventional nine month school year using the thematic curriculum.

A. Review of Literature: Many studies have been made on the effect of year-round education on students. The majority of the studies have focused on the high school and college programs. The majority of these studies have also been on either the quarter system or the addition of a summer program. At present, two public schools in the country are operating on the 45-15 plan - Valley View, Illinois, and St. Charles, Missouri. These school districts are conducting research studies of their programs.

B. Justification: According to the N.E.A. Research Division, over six hundred school districts in the United States, and fifteen of those in Virginia are seriously exploring some form of the year-round use of schools. A three year study of the effects of the 45-15 plan on students could provide valuable data for other school districts considering a year-round use of schools program.

2. Objectives:

To develop a statistical means that will provide, in part, a basis for evaluation of the pilot program related to the year-round use of educational resources. To accomplish the foregoing, the following null hypotheses will be tested:

A. There will be no statistically significant difference in the achievement of arithmetic between group X and group Y.

B. There will be no statistically significant difference in the achievement of arithmetic between group X and group Z.

C. There will be no statistically significant difference in the achievement of arithmetic between group Y and group Z.

D. There will be no statistically significant difference in the achievement of reading between group X and group Y.

E. There will be no statistically significant difference in the achievement of reading between group X and group Z.

F. There will be no statistically significant difference in the achievement of reading between group Y and group Z.

G. There will be no statistically significant difference in the personal adjustment between group X and group Y.

H. There will be no statistically significant difference in the personal adjustment between group X and group Z.

I. There will be no statistically significant difference in the personal adjustment between group Y and group Z.

J. There will be no statistically significant difference in the social adjustment between group X and group Y.

K. There will be no statistically significant difference in the social adjustment between group X and group Z.

L. There will be no statistically significant difference in the social adjustment between group Y and group Z.

M. There will be no statistically significant difference in the average daily attendance between group X and group Y.

N. There will be no statistically significant difference in the average daily attendance between group X and group Z.

O. There will be no statistically significant difference in the average daily attendance between group Y and group Z.

3. Design:

A. Sampling - of the approximately 4200 students in grades 1-8 that will be in the 45-15 plan, 300 students in each grade - one, three,

and six will be identified as the experimental group. This experimental group using the 45-15 plan of scheduling and the thematic curriculum will consist of 900 students identified as experimental group X. A like number of students in the same grades who are attending school in a conventional nine month plan with conventional subject curriculum will be identified as control group Y. A like number of students in grades one and three will be attending school on the conventional nine month plan but with the same thematic curriculum as group X. This group of students will be identified as group Z. There will be a total of 2400 students in the study.

The study is designed so that the analysis of the data can be accomplished by the variance techniques of multiple linear regression as described by Bottenberg and Ward.* Criteria and predictor variables in full and restricted regression models will be utilized in this analysis. Full and restricted models will be generated for each hypothesis to be tested.

B. Variables - (1) attendance - number of days absent. (2) achievement-reading and arithmetic. (3) personal adjustment - self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, freedom from withdrawing tendencies, and freedom from nervous symptons. (4) social adjustment - social standards, social skills, freedom from anti-social tendencies, family relations, school relations, and community relations.

C. Procedure - The S.R.A. Achievement Test will be administered as a pretest for students in grades one, three, and six and as a post-pretest at the end of each year for two consecutive years, and as a post-test at the conclusion of the final year.

Attendance records will be kept on each individual student in control and experimental groups for three consecutive years. The data will be analyzed at the end of each academic year and conclusions will be drawn at those times.

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*Robert A. Bottenberg and Joe H. Ward, Jr., Applied Multiple Linear Regression, Technical Documentary Report PRL-TDR-63-6, (U.S. Department of Commerce,

The California Test of Personality will be used as a pretest for all students in the study and also as a post-pretest each year for two consecutive years, and as a post-test at the conclusion of the final year.

The results of the data retrieved from the above instruments will be compared between the experimental and control groups.

4. Personnel and Facilities and Time Required:

The study will be conducted by local school personnel in Prince William County.

Personnel identified at this time:

Elementary Principals - Mr. Chandler, Mr. Sebastian, Mrs. Riddle, Mr. Salkeo, and Mr. Kilby

Systems Analyst - Mr. Colson

Director of Elementary Education - Dr. Riehm

Supervisor of Research & Development - Dr. Volk

Supervisor of Program Development - Ken Young

The three phases of the study will require three calendar years or 36 months, June 1971 to June 1974. Each phase will be 12 months.

5. Request for Approval of Expenditures for fiscal year 1972.

1 Quantity Requested	2 Description of Equipment, Materials and/or Services	3 Estimated Cost
4800	Calif. Test of Personality	$1,620.00
4800	S.R.A. Achievement Series	2,302.50
160 hrs.	Secretarial @ $2.25 per hr.	360.00
4800	Test Scored @ 15¢ each	720.00
5%	Pilot Supervisors Salary	1,500.00
1	Consultant @ $100 for 4 days	400.00
	Computer Time	250.00
	In-Service & Curr. Development	3,000.00
	Total -	$10,152.50

Division Superintendent of Schools

5,076.25

Do Not Write Below This Line

This application for a Pilot Study is approved. The anticipated expenses are approved as indicated not to exceed the amount of $5,076.25 which represents 50 percent reimbursement for expenditures under the approved Pilot Study.

July 21, 1971

Director, Division of Educational Research and Statistics

APPENDIX B

Contract with the Bureau of Educational Research to Conduct the Achievement Evaluation for the 45-15 Pilot Program[1]

An Agreement to Purchase Research Services to Conduct The Achievement Evaluation for the Year-Round School Project in Prince William County Schools

Through this agreement made by the Prince William County School Board, hereinafter referred to as the party of the first part, on this the 15th day of November 1971 with the Bureau of Educational Research in the Curry Memorial School of Education of the University of Virginia, hereinafter referred to as the party of the second part: the party of the first part agrees to purchase research services from the party of the second part to conduct the achievement evaluation of the year-round school project in Prince William County Schools.

In consultation with officials of the Prince William County System, the Bureau of Educational Research agrees to provide the following technical services:

1. Evaluation of achievement in reading and arithmetic by pupils in the experimental and control schools designated by the party of the first part. This evaluation will include pre and post-testing at times mutually agreed upon by the two parties.
2. An in-school evaluation of the effective or attitudinal impact of the year-round project on pupils in both experimental and control schools. This evaluation would be conducted at least once during the project period under contract or possibly twice, subject to mutual agreement by the two parties.
3. A periodic evaluation of instructional teacher behaviors and changes in the classroom. This evaluation will occur periodically throughout the project at times mutually agreed to by both parties.
4. Analysis of programmatic reading and arithmetic materials used by teachers and pupils in classrooms participating in this project.
5. At the direction of and in consultation with the Prince William County Schools, the party of the second part will furnish a single master report for subsequent distribution of findings and

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[1]A true copy of agreement between Prince William County School Board and Bureau of Educational Research in the Curry Memorial School of Education of the University of Virginia, November 15, 1971.

dissemination of information by the Prince William County Schools.

6. Members of the party of the second part will at the request of the first part be available in Prince William County for a reasonable number of planning, instructional and consultative sessions, press conferences, and other sessions involving community contacts.

7. The party of the second part will furnish the party of the first part with a reasonable number of written reports including at least one interim report and a final report.

In order that the party of the second part may be able to provide the aforesaid services, the party of the first part agrees to the following conditions:

8. Provide and fund the services of community aides.

9. Purchase all published tests used for the achievement evaluation.

10. Provide computer programming that will be able to develop the magnetic tape files for the student records and operate all of the computer programs of the Bureau of Educational Research needed for statistical and materials analysis. If the party of the first part cannot furnish the aforesaid programming then said party will fund the Bureau $450 per month to retain the services of a half-time Bureau programmer.

11. Provide free computer time on the Burrough's B5500 machine comparable to that for which the Bureau's program systems were developed. If the party of the first part cannot furnish the aforesaid computer time on the specified machine, said party will fund the Bureau in the amount of $5,400 to perform these services.

For the aforesaid services the party of the first part agrees to reimburse the party of the second part a total of nine thousand two-hundred and twenty dollars ($9,220.00) and additional costs should they be necessary and as specified above, the basis of such reimbursement to be mutually agreed upon.

The party of the first part expects the party of the second part to begin these services no later than November 24, 1971, and to complete them no later than July 31, 1972.

The party of the first part reserves the right to make the only release of the findings of this project with credit to the Bureau of Educational Research of the University of Virginia as achievement evaluation contractor.

/s/Milton D. Jacobson	/s/John F. Pattie
Milton D. Jacobson	John F. Pattie
Director	Chairman
Bureau of Educational Research	The County School Board
	Prince William County
Date November 17, 1971	Date November 17, 1971

APPENDIX C

A Proposal and Contract with Ned S. Hubbell and Associates to Conduct an Attitudinal Survey Related to the 45-15 Pilot Program

NED S. HUBBELL & ASSOCIATES, INC.
Public Relations
1918 Pine Grove Avenue, Port Huron, Michigan 48060
(313) 985-5321

Invoicing and Payment

Invoices will be sent to the client and payment requested in the following manner:

1) At the initiation of the contract for an amount equal to 25% of the total fixed price.

2) Upon completion of data collection for an amount equal to 40% of the total fixed price.

3) Upon submission of final written report for an amount equal to 35% of the total fixed price.

No contingency payment terms are acceptable other than those described above, unless agreed upon in advance and negotiated.

Period of Performance

The term of this agreement shall extend from November 3, 1971, to February 3, 1972.

Total Fixed Price: $14,475

Ned S. Hubbell — President
Ned S. Hubbell — Title

Board of Education — Superintendent of Schools

NED S. HUBBELL & ASSOCIATES, INC.
Public Relations
1918 Pine Grove Avenue, Port Huron, Michigan 48060
(313) 985-5321

Project Proposal "A"

This method would involve our firm in:

* Determining objectives of the survey.
* Developing the overall plan.

*Developing and pre-testing survey instruments:
(Interview questionnaire for Dale City elementary students)
(Interview questionnaire for Dale City middle school students)
(Written questionnaire for Dale City staff)
(Written questionnaire for out-county staff)
(Interview questionnaire for Dale City parents)
(Interview questionnaire for out-county registered voters)

*Selection of sampling plan and stratified random sample of each audience.

*Training interviewers, i.e.
Room mothers (for Dale City students)
Room mothers (for out-county students)
Dale City citizens (for Dale City parents)
Out-county citizens (for registered voters)

*Coordinating interviews.

*Administering written questionnaires for Dale City staff and out-county staff.

*Assessing the results of all data from each survey.

*Preparing an interpretive report of the project.

*Communicating the results, in cooperation with the school district staff.

It is recommended that data processing facilities of the school district be utilized for tabulation of the data from each of the surveys.

A tentative timetable for implementing the project under this method could require from 16 to 22 weeks.

Director of the overall project would be Ned S. Hubbell, assisted by David R. Bird and Frederick J. Letzgus.

Cost for utilization of Ned S. Hubbell and Associates, Inc., where our firm handles all responsibilities, with the exception of any personal interviewing, is $8,600, including all expenses except the cost of printing questionnaires (which may be accomplished through facilities of the school district).

Project Proposal "B"

This method of implementation would include all of the project responsibilities previously mentioned, with one exception: professional staff members of Ned S. Hubbell and Associates, Inc., would conduct the personal interviews of a stratified random sampling of (red, blue, green and orange) Dale City parents.

Due to the fact that a number of surveys have already been taken in recent months in Dale City, some responses sought by a group opposed to year-round school, we would strongly suggest that the additional cost of utilizing outside, trained interviewers be offset by the necessity to avoid renewing any community concerns through the use of Dale City citizens actually conducting the interviews of other Dale City citizens.

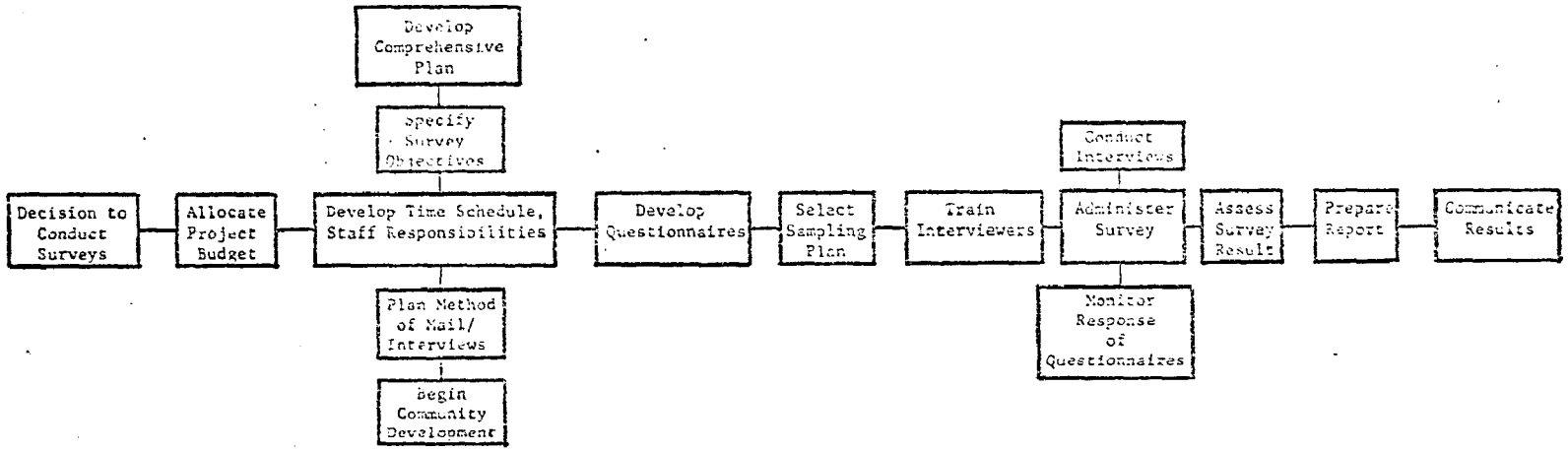
While complete data on the number of Dale City parent households has not yet been available, we have estimated a sample size of 384 households be considered for the personal interviews.

Resumes of each of our professional staff members who would be utilized for such interviewing are included in this proposal report. All are trained and experienced in interviewing (three of the four are former newsmen), and all have broad experience in community surveys. They have conducted very similar interviews in three Michigan school districts -- Utica, Port Huron, and Coldwater.

Cost of this survey method would be $14,475, excluding local mileage of our interviewing team. Time required for the total project is estimated at 16 weeks.

Proposal "C"
Addl. Cost $4,000

SUGGESTED STRATEGY FOR SURVEY PROJECT



APPENDIX D

Proposal and Contract with Education Turnkey Systems to Conduct a Cost Analysis of the 45-15 Pilot Program[2]

Gentlemen:

Education Turnkey Systems, Inc., a private corporation chartered by the District of Columbia will perform the following services under contract to the Board of Education, Prince William County Schools in the conduct of an economic analysis of selected programs. Specifically, Education Turnkey Systems will provide services and deliver reports as follows:

1. To analyze two instructional programs, one operating on a 12-month basis and one on the normal 9 1/2 month basis, at either the elementary or secondary level. The Superintendent will be responsible for selecting the specific grade level and the typical school.
2. To provide all standard reports described in the ETS, Inc. Guide to COST-ED Analysis, which is made part of this contract by reference.
3. To provide, for each Model built, 15 special analyses, including trade-offs and sensitivities, upon request by the Superintendent.
4. To provide a summary and interpretive narrative of the results of the economic analysis.
5. To provide a report and brief narrative to the School Board and/or interested citizens on the Economic Factor Ranking and prior computer reports within 10 days of verification by the Superintendent.
6. To draft and present a final report, including a briefing, to the School Board, the Superintendent, and his designees.
7. To conduct two press conferences at a site chosen by the Board of Education, one at the completion of the Economic Factor Ranking Analysis and one at the completion of the overall analysis.
8. To provide on-the-job training to one member of the Prince William County Schools administrative staff in a manner such that the staff member will be capable of interpreting and utilizing the COST-ED reports and analysis for management and interpretive purposes.
9. To withhold release of the results of the project until approved by the Prince William County School Board.

The Superintendent or his designee agrees to perform the following services to ensure the timely delivery of the above

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[2]A true copy of letter from Educational Turnkey Systems to Dr. Ernest Mueller.

final products:

1. To gather all source documents, as requested by ETS, Inc. including budgets, test scores, blueprints of specific schools, etc., and make them available to ETS, Inc. staff on a mutually-agreed upon schedule.

2. To verify and validate data inputs which are questionable or are determined to be questionable by ETS, Inc. staff.

3. To provide all other necessary assistance to ETS, Inc. staff to ensure the availability, validity, and reliability of data.

4. To provide for and make arrangements for facilitating pre press conferences and public briefings to be conducted by ETS, Inc. staff.

PROPOSAL TO PRINCE WILLIAM COUNTY SCHOOLS
[on separate page]

The September 1971 issues of Phi Delta Kappan published "The Third Annual Survey of The Public's Attitudes Toward The Public Schools, 1971" by George Gallup. This Gallup survey indicates that the American Public believes what public school administrators and Boards of Education have known for years--that "finance" is the biggest problem facing public schools.

Although the public appears to be aware of the problem, they seem to have a generally naive understanding of the possible solutions. The public favors cost cutting by such means as reducing administrative personnel, reducing staff counsellors, and charging students rent for textbooks rather than providing them free. An administrator or board member may have the subjective feeling that these solutions will not do much to ease his financial problems. Means of cost cutting which the public treated with disfavor were reducing teachers' salaries, increasing class sizes, and reducing janitorial and maintenance services. Those familiar with public school finances know that these factors are the ones which have the greatest impact on total costs.

One means of reducing costs which the general public favors over most other means is the twelve-month school year. This approach might cut costs by allowing existing school facilities to handle more students.

COST-ED Analysis

Education Turnkey Systems has applied its computerized COST-ED Analysis (see appendix A) to the finances of over 100 instructional programs in school districts throughout the United States. COST-ED Analysis has been used to investigate and quantify the impacts, of contributing factors (such as class sizes, teachers' salaries, administrative personnel, textbook expenditures, etc.), on total

costs.

COST-ED Analysis with its detailed treatment of facility costs is ideally suited for similar analyses of the implications of the twelve-month school. It has the capability to consider in detail the effects on total per-pupil costs of changes in student schedules, staff costs, and facility expenses.

Education Turnkey Systems will apply its COST-ED Model to the question of the twelve-month school year or 45/15 plan in Prince William County Schools.

Analytical Approach

Prince William County Schools will select the school in the Dale City area, currently operating on a twelve-month basis, which they consider to be most typical of other schools in Prince William County. Education Turnkey Systems will construct a detailed COST-ED Model of this school at a grade level selected by Prince William County.

Using this model as a base, Education Turnkey Systems will construct a comparable COST-ED Model for that school, as if it were operating on a normal 9 1/2-month basis. Data for construction of the model for this hypothetical situation should be available from two sources: the nature of conduct of the selected school during the previous year when it was operating on a 9 1/2-month school year, and other similar schools in Prince William County which are operating on a 9 1/2-month school year.

COST-ED Computer Reports

The following COST-ED Computer Reports (see appendix A) will be produced for both the 12-month school year and 9 1/2 month school year programs in Prince William County:

. Analysis Summary--will give at-a-glance results for comparing programs' total per-pupil costs.

. Data Authorization Listing--a listing of the data inputs which were used to construct each of the COST-ED Models.

. Economic Structure Analysis--detailed breakdowns of the total costs given in the Analysis Summaries, including subtotals at various computation levels.

. Sensitivity Analysis--detailed analysis of the impacts of each of the relevant cost factors on total costs.

. Economic Factor Ranking--presents key economic factors ranked according to their "relative power" to affect total costs.

These latter two reports will enable administrators to answer a large number of "what-if" questions involving both 9 1/2-month and 12-month school years and, thereby, better assess the implications of changes in both programs.

Additionally, Education Turnkey Systems will provide, for both programs, up to fifteen special analyses computer reports, either Special Sensitivity Analyses or Trade-Off Analyses. These reports amplify on the information presented in the Sensitivity Analysis

and Economic Factor Ranking reports.

Responsibilities

Education Turnkey Systems will be responsible for:

- collection of all data required for the analyses of both 12-month and 9 1/2-month programs
- performance of detailed analyses of both programs
- construction of computer COST-ED models
- supervision of computer operations
- production of COST-ED computer reports for both programs
- presentation of final results

Prince William County Schools will locate data source documents where available and arrange meetings for Education Turnkey Systems staff members with appropriate district personnel.

The cost of the services described in this proposal will be $10,750 and delivery of final results will be made within 90 days of initiation of the project.

Appendix A. A Guide to COST-ED Analysis--a detailed description of the COST-ED Model

Appendix B. A Description of the COST-ED Model--a general description of the COST-ED Model and its uses

Contracting Policy

Education Turnkey Systems, Inc. engages in fixed price contracts for the conduct of economic analysis and the application of the COST-ED methodology for school systems, industry and with other clients. The fixed price fee includes personnel labor costs, staff support, direct costs such as computer time, travel, overhead costs, general and administrative costs, pro-rated developmental costs and a fixed fee.

Invoicing and Payment

Invoices will be sent to the client and payment requested in the following manner:

1) At the initiation of the contract for an amount equal to 25% of the total fixed price.

2) At the completion of 40% of the period of performance of the contract, for an amount equal to 40% of the total fixed price.

3) Upon completion of the period of performance of the contract, for an amount equal to the remaining 35% of the total fixed price.

No contingency payment terms are acceptable other than those described above, unless agreed upon in advance and negotiated.

Period of Performance

The term of this agreement shall extend from December 1, 1971 to May 31, 1972.

Total Fixed Price: $10,750

/s/ Charles F. Black	President
	Superintendent
/s/ John F. Pattie	of Schools
Board of Education	Title

APPENDIX E

Prince William County Nine-Month School Calendar 1971-72

				Student Days
Monday	August	30	Schools Open	2
Monday	September	6	Labor Day Holiday	21
Monday	October	11	Columbus Day Holiday	19
Wednesday	October	13	End 1st 6 Weeks: 31 days	
Friday	October	22	Reports to Parents	
Monday	October	25	Veterans Day Holiday	
Thursday Friday	November November	25-- 26	Thanksgiving Holiday	19
Tuesday	November	30	End 2nd 6 Weeks: 30 days	
Friday	December	10	Reports to Parents	16
Wednesday	December	22	Close for Christmas Holidays	
Monday	January	3	Schools Reopen	15
Friday	January	21	End 1st Semester, 3rd 6 Weeks: 31 days	92
Wednesday	January	26	Begin Second Semester	4
Wednesday	February	2	Reports to Parents	20
Monday	February	21	George Washington's Birthday	
Friday	March	10	End 4th 6 Weeks: 32 days	
Friday	March	17	Reports to Parents	
Friday Monday	March April	31-- 3	Spring Holiday	

Friday	May	5	Reports to Parents	22
Monday	May	29	Memorial Day Holiday	
Thursday	June	8	Final Teaching Day	
				52
				144

APPENDIX F

Prince William County 45-15 Year-Round School Calendar for 1971-1972

BLUE GROUP

PRINCE WILLIAM COUNTY SCHOOLS

1971 -1972 YEAR-ROUND SCHOOL CALENDAR

Dates shown in color on this calendar indicate this group of students is expected to attend school. *Underlined* dates indicate that schools will be open but this group is not expected to attend.

JUNE 1971

S	M	T	W	Th	F	S
27	28	29	30			

JULY 1971

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST 1971

S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER 1971

S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER 1971

S	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

NOVEMBER 1971

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER 1971

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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JANUARY 1972

S	M	T	W	Th	F	S
2	3	4	5	6	7	1/8
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23	24	25	26	27	28	29
30	31					

FEBRUARY 1972

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20	21	22	23	24	25	26
27	28	29				

MARCH 1972

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26	27	28	29	30	31	

APRIL 1972

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23	24	25	26	27	28	29
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MAY 1972

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21	22	23	24	25	26	27
28	29	30	31			

JUNE 1972

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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

RED GROUP

PRINCE WILLIAM COUNTY SCHOOLS

1971 -1972 YEAR-ROUND SCHOOL CALENDAR

Dates shown in color on this calendar indicate this group of students is expected to attend school. *Underlined* dates indicate that schools will be open but this group is not expected to attend.

JUNE 1971

S	M	T	W	Th	F	S
27	28	29	30			

JULY 1971

S	M	T	W	Th	F	S
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4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST 1971

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29	30	31				

SEPTEMBER 1971

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26	27	28	29	30		

OCTOBER 1971

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17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

NOVEMBER 1971

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DECEMBER 1971

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JANUARY 1972

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FEBRUARY 1972

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MARCH 1972

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APRIL 1972

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MAY 1972

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JUNE 1972

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25	26	27	28	29	30	

GREEN GROUP

PRINCE WILLIAM COUNTY SCHOOLS

1971 -1972 YEAR-ROUND SCHOOL CALENDAR

Dates shown in color on this calendar indicate this group of students is expected to attend school. *Underlined* dates indicate that schools will be open but this group is not expected to attend.

JUNE 1971

S	M	T	W	Th	F	S
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JULY 1971

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AUGUST 1971

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SEPTEMBER 1971

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OCTOBER 1971

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NOVEMBER 1971

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DECEMBER 1971

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JANUARY 1972

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FEBRUARY 1972

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MARCH 1972

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APRIL 1972

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MAY 1972

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JUNE 1972

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ORANGE GROUP

PRINCE WILLIAM COUNTY SCHOOLS

1971 -1972 YEAR-ROUND SCHOOL CALENDAR

Dates shown in color on this calendar indicate this group of students is expected to attend school. *Underlined* dates indicate that schools will be open but this group is not expected to attend.

JUNE 1971

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JULY 1971

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18	19	20	21	22	23	24
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AUGUST 1971

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SEPTEMBER 1971

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OCTOBER 1971

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NOVEMBER 1971

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DECEMBER 1971

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JANUARY 1972

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23	24	25	26	27	28	29
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FEBRUARY 1972

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MARCH 1972

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26	27	28	29	30	31	

APRIL 1972

S	M	T	W	Th	F	S
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
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MAY 1972

S	M	T	W	Th	F	S
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21	22	23	24	25	26	27
28	29	30	31			

JUNE 1972

S	M	T	W	Th	F	S
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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

APPENDIX G

Example of Curriculum Theme Involving the Correlation of Several Subject Areas

Grade 1

THEME: Working and Playing Together (Home and Family)

OBJECTIVES: Can identify members of his family

Can identify his street and house number

Practices good safety rules and procedures

Can identify proper use of drugs

LANGUAGE ARTS

1. Gives oral directions for getting to school from home
2. Individual experience charts about families
3. Poems--Zigzag Boy and Girl
4. Stories
5. Draw a picture of your family enjoying a meal or playing a game
6. Share and discuss riddles
7. Dramatizations (safety rules, et cetera)
8. Practice good listening habits

SOCIAL STUDIES

1. Can name street and house number
2. Identify phone number
3. Identify names in family
4. Learns to share
5. Learns to be courteous and respectful of rights of others
6. Must contribute and take responsibility in family in order to have privileges
7. Identify ways to have fun and recreation
8. Families differ in foods they serve, customs, et cetera

9. Discuss the disposal of old medicine
10. Harm can be inflicted by innocent objects (razor blades in apples, et cetera)
11. Discuss the proper storage of medicine and the importance of keeping medicine out of reach of small children

9. Discuss occupations of Mothers and Dads

SCIENCE

1. Name simple machines used by family
2. Health pp. 137-45 (may be used here or in unit on kinds of homes)
3. Bike safety
4. Meaning of traffic signal
5. Dangers of trash burning
6. Learns how to report a fire
7. Learns fire exits at home
8. Danger of playing with matches
9. Danger of guns, electrical equipment, poisons

HEALTH

1. Health Book pp. 68-107
2. Practices good health habits
3. Knows and practices safety and health rules such as keeping toys and possessions in proper place to avoid accidents
4. Safety using simple machines
5. Do not accept rides from strangers
6. Develop an awareness of the importance of taking any substance that might be harmful to the body

7. Danger in accepting gifts from strangers
8. Recognize harmful effects of tobacco and alcohol
9. Medicine should be dispensed by authorized person
10. Drugs and household chemicals have proper uses
11. The Fire Game p. 107 (Spark)

MUSIC

1. Farmer in the Dell

PHYSICAL EDUCATION

1. Red Light p. 133 (state guide)
2. Team sports

MAP AND GLOBE SKILLS

SUGGESTED FIELD TRIPS

1. Trip to drug store
2. Take a walk to identify all homes of classmates

ART

1. Dioramas
2. Make Family using pipe cleaners
3. Clay homes and family members
4. Make individual folders to contain work on this unit
5. Make homes from small milk cartons
6. Make paper bag puppets

RESOURCE PERSONS

1. Pharmacist

SUGGESTED ACTIVITIES

1. Keep an accident record for home-cause and how it could have been prevented
2. In My House p. 23 (Probe)
3. Blow smoke through a handkerchief to show for stain
4. Make a medicine cabinet and fill with drugs

AUDIOVISUAL MATERIALS

COUNTY FILMS

237 L Safety in the Home

49 S Donald's Fire Survival Plan

63 S Families and Recreation

56 S Families and Weather

STATE FILMS

Bicycle Safety Skills

Safe Use of Tools

Safety at Home--UVA

Safety at Play

Safety Begins at Home

Safety in the Home

Safest Way

Smokey the Bear

DALE CITY

Homes Around the World

Safety at Home

Transparency: Homes

NEABSCO

Health and Safety

Safe and Sound at Home

Safe and Sound along the Way

BEL AIR

Family Members Work

Working and Playing Together

Better Safe than Sorry

SVE Set--Living with Your Family

Record--A Day with Your Family

and two sound filmstrips

SVE Set--Learning to Live Together II

Record--Learning to Make Friends

and two sound filmstrips

SVE Set--Learning to Live Together I

Record--Working Together in the Family

and two sound filmstrips

Record--Learning to Be Unselfish

and two sound filmstrips

SVE Set--Developing Basic Values

Record--Consideration for Others

and two sound filmstrips

Record--Acceptance of Differences

and two sound filmstrips

Record--What Is a Family?

and two sound filmstrips

APPENDIX H

Example of a Phase of the Mathematics Component of the Thematic Curriculum, Grades 1-5

Workbook pages 71-80

Duplicating Masters 58-62

Diagnostic Tests 18-19

Course of Study: Mathematics

Phase#: 33--Chapter 8, pp. 222-51

Major Concept: Sets, Numbers, Numerals

PARTS OF CONCEPT	LEARNING OBJECTIVES
1. Sets, finite and infinite	1. Can describe or list sets as finite or infinite
2. Multiples	2. Can use multiples to solve equations
3. Odd and even numbers	3. Can distinguish between odd and even numbers
4. Common multiples	4. Can find common multiples of given numbers
5. Factors	5. Can define and identify prime numbers
6. Prime numbers	6. Can solve verbal problems
7. Verbal problems	7. Can measure area by multiplying with standard units
8. Measurement: Area	8. Can measure the volume of a cube
9. Measurement: Volume	
10. Numeration: Tens, Hundreds, Thousands	
11. Numeration: Five and six digit numerals	
12. Numeration: Millions	

13. Verbal problems

9. Can work problems using two, three and four digit numerals
10. Can read and work problems using five and six digit numerals
11. Can work problems with numerals that involve millions
12. Can solve verbal problems

MATERIALS

1. Sets of objects
2. Flannel board and felt objects
3. Abacus
4. Place value chart
5. Squared paper

FILMS

COUNTY STATE

ACTIVITIES

SKILL GAMES FOR MATHEMATICS

1. Nonverbal Odd-Even Game p. 19
2. Factor Tree p. 14
3. Merry Mix Up p. 14
4. Pirates Treasure p. 23

PLUS

5. Odd or Even? p. 29

SUGGESTED ACTIVITY

What Would You Do?

Give the children several story problems with no numbers involved. Ask them to tell whether they would add, subtract, multiply or divide.

Example: If Bob knows how many marbles he has and Jack knows how many marbles he has, how could the boys find out how many marbles they have altogether?

The children can then add numbers to the problems and work them out, after they have decided which operation should be used.

AUDIOVISUAL MATERIALS

BEL AIR

Overhead Visuals #22, 23, 24, 25

Filmstrips: Factors and Primes

NEABSCO

DALE CITY

APPENDIX I

Example of a Phase of the Language Arts Component of the Thematic Curriculum, Grades 1-5

Sentence and Paragraph Structure

Capitalization and Punctuation

LANGUAGE ARTS

SKILLS	ACTIVITIES
1. Subjects	Spice
2. Predicate	Sentence Puzzles p. 204
3. Sentence patterns	Punctuation and Capitalization
n-v	p. 46
n-v-n-	Learning Activities for Reading
4. Punctuation rules	Punctuation p. 119
comma	
terminal punctuation	Reading Games
quotation marks	Professional Proofers p. 101
5. Sentence types	Build a Sentence p. 84
declarative	
interrogative	
imperative	
exclamatory	
6. Sentence construction	
7. Capitalization rules	

8. Paragraph form

9. Paragraph unity

LANGUAGE BOOK

Chapter 1

Reading Sentences p. 1

Word Order p. 2

Kinds of Sentences pp. 4-6

Subject/Predicate p. 7

A Sentence Pattern p. 8

Making New Sentences p. 9

Another Sentence Pattern p. 10

Making More New Sentences p. 11

Questions pp. 12-13

Chapter 7

Learning to Paragraph p. 172

Proofreading for Paragraphs p. 178

Chapter 10

Why Do You Study Sentences p. 243

Using a Sentence Pattern p. 244

Using Another Sentence Pattern p. 246

Subject/Predicate p. 248

Kinds of Sentences p. 249

Using Commas in Sentences p. 250

Combining Ideas p. 252

Proofreading a Paragraph p. 258

SPELLING BOOK

AUDIOVISUAL MATERIALS

FILMS

STATE

26105 Introduction to Grammar--Punctuation

DALE CITY

82104 Punctuation--Mark Your Meaning

25505 Punctuation for Beginners

42909 Building Better Sentences

26205 Capitalization for Beginners

42909 Building Better Sentences

26205 Introduction to Grammar--
Sentences

NEABSCO BEL AIR

Transparencies: English Language
Pronouns
English Language
Punctuation

Reporting LANGUAGE ARTS GRADE 4

SKILLS	ACTIVITIES
1. Skimming	Spice
2. Taking notes	Reading to Gain Information p. 57
3. Writing outlines	Learning Activities for Reading
4. Writing reports	Organization and Outlining pp. 91-95
	Main Ideas p. 83
	Reading Games
	Skimming the News
	Scrambled Outline p. 106

LANGUAGE BOOK	SPELLING BOOK
Chapter 9	
How Do You Start p. 219	
Choosing a Topic p. 219	
Taking Notes p. 224	
Making an Outline pp. 227-28	
Writing Your Report p. 229	
Reading a Report p. 230	
Listening to Reports p. 230	
Judging Reports p. 230	

APPENDIX J

Example of Thematic Correlation of Subject Areas, Grade 6

Cultural Interrelationships: Creative Reading and Writing: Wonderful World of Animals

A knowledge of how people meet basic needs, the organizations and institutions they have developed, and the customs and traditions they cherish are essential to an understanding and appreciation of a total culture. This will be provided by depth studies of selected countries in which emphasis will be placed on the skills of analyzing a culture. Further opportunities to practice these skills will be offered through independent student selected research projects.

Creative expression is the product of a culture and reflects the thought and feelings of a people. The language portion of this segment will help the student develop his skill in creative reading and writing. Emphasis will be placed on the development of the senses, the use of imagination, and the skills of self-expression.

The science unit involved here was chosen to parallel in the animal kingdom the same general principles as the social studies. Basic needs of living things, the total organization of the animal kingdom, and communities of living things are studied with a depth study of those animals and physical conditions most common to the countries selected for concentration.

APPENDIX K

Per Pupil Formulas for Subject Area Fund Allocations

1971-1972 Per Pupil Formula for Subject Area Fund Allocation for Grades 1-5

Subject	Per Pupil Allocation
Language Arts	$1.40
Mathematics	.20
Science	.50
Social Studies	.60
Music	.50
Physical Education	.50
Art	.65
Library	1.50

1971-1972 Per Pupil Formula for Subject Area Fund Allocation for Grades 6-8.

Subject	Grade	Per Pupil Allocation
Language Arts	6	$ .70
	7	.35
	8	.35
Mathematics	6	.20
	7	($50.00 Set Allocation)
	8	($50.00 Set Allocation)

Science	6	.50
	7	.60
	8	1.20
Social Studies	6	.45
	7	.35
	8	.35
Foreign Languages	7	.35
	8	.35
Industrial Arts	7	3.00
	8	3.00
Music	6	1.00
	7	1.00
	8	1.00
Physical Education	6	.35
	7	.35
	8	.35
Art	6	1.00
	7	2.00
	8	2.00
Homemaking	7	1.80
	8	1.80
Library/Audiovisual	6	1.50
	7	1.50

8	1.50

Source:

Prince William County School Board, Office of Assistant Superintendent for Administration.

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